An exploration of strategy-based reading instruction using expository science text in grades 2-5

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AN EXPLORATION OF STRATEGY-BASED READING INSTRUCTION USING EXPOSITORY SCIENCE TEXT IN GRADES 2-5

A Dissertation

Submitted to the Graduate Faculty of Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the Requirements for the degree of Doctor of Philosophy

In The Department of Curriculum and Instruction

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DEDICATION

This study is dedicated to Dr. Earl Cheek, Jr., with genuine appreciation for his continuous encouragement, expertise, professional guidance, and patience during my journey as a student at Louisiana State University. Thank you, Dr. Cheek.

This is also dedicated to my husband, Jimmy, for his confidence in me and for supporting me with love and patience, during our continuous journey with educational endeavors.
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As I pursued “the road less travelled”, there were many moments of joy as well as a few obstacles to overcome along the journey. I am thankful for the experiences I have been able to have as a result of choosing a path less travelled by most educators. Heartfelt gratitude and sincere appreciation is extended to all those who have nurtured me through the lifelong dream to pursue a doctoral degree.

Special gratitude to:

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- My mother, Gloria Wade, and my deceased father, Gareld Wade, for instilling in me the value of education and lifelong learning
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# TABLE OF CONTENTS

DEDICATION..............................................................................................................ii

ACKNOWLEDGEMENTS..........................................................................................iii

LIST OF FIGURES..................................................................................................vi

ABSTRACT...................................................................................................................vii

CHAPTER I: INTRODUCTION .................................................................................1
  Background of Study.............................................................................................1
  Factors that Affect Comprehension.................................................................2
  Expository Text Structures and Patterns.........................................................3
  Literacy Instruction.............................................................................................6
  Literacy and Accountability Demands..............................................................7
  Strategy-based Instruction...............................................................................9
  Expository Text.................................................................................................14
  Teacher’s Role.....................................................................................................14
  Statement of the Problem.................................................................................18
  Research Questions.........................................................................................20
  Qualitative Inquiry.............................................................................................20
  Significance of the Study..................................................................................21
  Limitations of the Study...................................................................................22

CHAPTER II: REVIEW OF THE LITERATURE .........................................................25
  Facets of Comprehension..................................................................................25
  Studies involving Strategy Instruction..........................................................30
  Studies Related to Expository Text.................................................................32
  Scaffolding Instruction using Expository Text...............................................36
  National Concern..............................................................................................41
  Expository Text Literacy..................................................................................43

CHAPTER III: METHOD..............................................................................................49
  Characteristics of Qualitative Research.........................................................51
  Case Study.........................................................................................................57
  Participant Observation.....................................................................................60
  Interview...........................................................................................................63
  Developmental Reading Sequence (DRS) ......................................................63
  Analysis of Documents.....................................................................................68
  Findings.............................................................................................................70
  Bias.....................................................................................................................70
CHAPTER IV: FINDINGS AND DISCUSSION .......................... 72
  Interview with the Principal ........................................... 72
  Interview with Key Informant........................................... 77
  Interview with Teacher A............................................. 80
  Interview with Teacher B ............................................. 83
  Interview with Teacher C............................................. 86
  Interview with Teacher D............................................. 88
  Interview with Teacher E............................................. 90
  Interview with Teacher F............................................. 94
  Observations of Teacher A and Teacher B ......................... 97
  Observations of Teacher C and D .................................. 100
  Observations of Teacher E ........................................... 104
  Observations of Teacher F ........................................... 107
  Similarities and Differences of the Teachers ...................... 109
  Similarities and Differences in Instructional Strategies .......... 115
  Assessment ..................................................................... 117

CHAPTER V: CONCLUSIONS AND
IMPLICATIONS FOR FUTURE RESEARCH ............................ 121
  Research Question 1 .................................................... 121
  Research Question 2 .................................................... 126
  Implications for Further Research ................................... 130
  Implicit Findings of the Study ....................................... 131

REFERENCES ..................................................................... 132

APPENDIX A: CONSENT FORM ........................................ 148

APPENDIX B: PRINCIPAL INTERVIEW QUESTIONS .............. 149

APPENDIX C: CLASSROOM TEACHER INTERVIEW QUESTIONS ... 150

APPENDIX D: KEY INFORMANT INTERVIEW QUESTIONS ........ 151

APPENDIX E: TEACHER OBSERVATION FORM .................... 152

APPENDIX F: TEACHER RATING SCALE FOR OBSERVATIONS .... 154

APPENDIX G: OBSERVATIONAL TABLE OF
THE NINE COMPONENTS OF EVERY SOCIAL SITUATION ....... 155

VITA ............................................................................... 156
LIST OF FIGURES

Figure 1: Reading Signal Words and Phrases .................................................................6
Figure 2: Comprehension Strategies .............................................................................12
Figure 3: Attaining Scientific Literacy ........................................................................47
Figure 4: Developmental Reading Sequence (DRS) .....................................................66
Figure 5: Strategies Good Readers Use ......................................................................110
ABSTRACT

This study explored strategy-based reading instruction using science expository text in grades 2-5. The exploration revealed that elementary teachers used a variety of reading strategies using expository text for science instruction in grades 2-5.

Spradley’s (1980) *Developmental Reading Sequence*, interviews, observations, and case studies of elementary science teachers in grades 2-5 were research techniques utilized for this study.

This study centered on case studies of six elementary teachers and how they used reading strategies during science instruction. The findings of the study revealed that although the teachers’ use of expository text was limited during this study, the teachers utilized reading strategies that extended and elaborated the students’ oral discussions during science instruction. The classroom conversations about science topics extended the students’ background knowledge of the science concepts that related to science expository text materials in grades 2-5.

This study revealed that the teachers in this study were concerned with the readability level of the science texts that are available in grades 2-5, and that instructional time barriers exist for science instruction during the school day.

Implications for further research may include alignment of reading strategy instruction with science instruction using print materials that are matched with the students’ instructional reading levels. Implications for further research include delving into why time is a barrier for science instruction related to expository text in the elementary grades. Further research may include how teachers can align the basal reader expository text selections with the science curriculum in elementary grades.
CHAPTER I: INTRODUCTION

Background of Study

As elementary students transition from the primary grades and move into fourth grade and fifth grade more of the reading materials are presented to the students in an expository style (Collins & Cheek, 1999). Valuable insight can be gained by exploring strategy-based reading instruction related to expository text in grades two through five, especially in the major area of focus surrounding reading comprehension. To address comprehension development beyond the emergent reader stage and beyond, a mixed approach of multiple comprehension strategies is advocated (Williams, 2003). Research-based strategies, including story structure, summarization, self-monitoring, visualization, and other research-based strategies help teachers provide students with necessary foundational skills to be successful in future grade levels (Laster, Ortlieb, & Cheek, 2009). During the past few years, teachers at all grade levels have been increasingly more interested in developing student understanding of expository text (Moss, 2004). Professional books designed to help teachers involve elementary school children reading and writing informational texts are proliferating (Moss, 2005), and interest in trade books is at an all time high. In almost every state, the ascendance of standards-based education throughout the United States has helped spark interest in students’ ability to read informational text. Increased accountability related to informational text and The Information Age. Reinking’s 1998 research found that the increased use of technology is dramatically changing the way we live with the varieties and availability of the Internet, websites, and other forms of communication that have changed our views about what it means to be literate. Kamil & Lane (1997) concluded that skills also require that students capably read the printed text on websites, most of which are composed
of expository text. It is imperative that even young children begin to develop an understanding of expository text in order to become successful lifelong readers.

Factors that Affect Comprehension

Since comprehension is a complex process, it is affected by a myriad of factors. Thinking about our own reading experiences, we can identify a number of factors that affect our comprehension. We may say that reading our choice of books that interest us, reading for specific purposes, or reading for pleasure affect our comprehension. Useful illustrations, headings and subheadings, or less dense print on a page may affect our comprehension. These examples illustrate three major factors that affect comprehension: the reader, the text, and the situation (Weaver, 2002). Sweet and Snow (2003) identified three factors that affect comprehension as: the reader, the text, and the activity, all existing within a sociocultural context, while (Irwin, 1991) identified the three factors as the reader, the text, and the purpose. Reading comprehension is affected by the reader’s interest in and background knowledge of the topic, the strategies the reader knows how to use, and the reader’s self-image and their physical and emotional state. Gill (2008) emphasized that style, layout, and organization of the text; difficulty of the vocabulary used; concept load or density of the print on a page; and even the presence or absence of text illustrations, charts, and diagrams can affect students’ comprehension. Comprehension can also be affected by the situation in which the reading takes place. For children, reading takes place within the culture of the school, but can be affected by the students’ self-concepts and the social groups to which they belong (Weaver, 2002). An understanding of these various factors can help teachers design effective lessons with strategies that support reading comprehension.
Expository Text Structures and Patterns

In order to understand the structure of expository materials, students need to become aware of the various organizational patterns and structures that are used in expository text. Students may experience difficulty with informational (expository) text because they have not been taught how to read expository text materials. Children need instruction that will familiarize them with the organization and structure of informational texts. Goldman & Rakestraw (2000) and Pearson & Duke (2002) found that students who learn to use the organization and structure of expository text are better able to comprehend and retain the information found in that type of text. Goldman & Rakestraw (2000) also illustrated that knowledge of the structure of different text structures develops over time for children; older children have greater understanding of different text types than younger children do.

Langer (1985) illustrated students of all ages generally find reading expository text more difficult than reading narrative text. The teaching of expository text structures can begin as early as kindergarten, Moss (2004) found that text becomes increasingly more sophisticated as elementary students move through the grades. Therefore, the readability of the science texts becomes more difficult to read after first grade.

Expository text has different text structural patterns that refer to the organization of ideas in the text and the relationships that those ideas form to communicate meaning (Meyer & Rice, 1984). The five common text structures for expository text, as stated in Meyer’s (1985) research include description, sequence, comparison and contrast, cause and effect, and problem and solution. Particularly in expository text, authors use signal words as clues to alert readers to expository text patterns, and often the signal words are implied rather than stated.
Moss (1985) emphasized that implied signals in expository text can account for students having more difficulty in comprehending the expository text patterns.

In books for the emergent or younger readers, the expository text patterns may provide the macrostructure, or overall structure, for a particular topic. However, at the paragraph level, authors may use several structures within a paragraph, page, chapter, or whole book. As students increase their understanding of expository text structures, they can begin to identify texts in their own textbooks that illustrate a variety of text structures. Fang, in 2008, contended that without specific training in the art of expository reading, students would find expository text alienating and difficult to read. Collins & Cheek (1999) noted that as students’ knowledge of the organization of expository text structure improves, comprehension will improve, as well. There is a great need for students to be aware of the text structures of expository text as they develop as readers beyond the emergent reader stage so that they can be successful lifelong readers.

Exposition is the primary mode of discourse found in informational texts by telling, showing, describing, or explaining. Meyer, Brandt, & Bluth (1980) underscored that good readers know how to look for major thought relationships. Strategic readers approach a reading assignment looking for a predominant text pattern or organization that will tie together the ideas contained throughout the text passage.

Sometimes students have difficulty in identifying relationships within expository text passages, particularly in the content areas of science and social studies. Some reading researchers have identified some important common patterns and relationships in text passages and patterns used in expository text that students need to be able to identify as they read expository text materials.
Five common text patterns that seem to predominate in expository writing are description, sequence, comparison and contrast, cause and effect, and problem and solution, and are explained in the following information. Vacca & Vacca (2002) identified the following text patterns.

- **Description.** Providing information about a topic or idea, (facts, characteristics, traits), usually listing by criteria including size or importance. Niles (1965) and Bartlett (1978) found the description pattern to be the most common way of organizing texts.

- **Sequence.** Putting facts, events, or concepts into a sequence. Authors trace the development of the topic or gives steps in the process. References to time may be implied or explicit, but sequence is evident throughout the pattern.

- **Comparison and contrast.** Pointing out likenesses (comparison) and/or differences (contrast) among facts, people, events, and concepts.

- **Cause and effect.** Showing how facts, events, or concepts (effects) happen or come into being because of other facts, events, or concepts (causes).

- **Problem and solution.** Showing the development of a problem and one or more solutions to the problem.

A signal may be a word or a phrase that helps the reader follow the writer’s thoughts. Linguists call these words connectives, or ties, because they connect one idea to the other (Halliday & Hasan, 1976). Reading researchers Vacca & Vacca (2002) illustrated that connectives, or signal words, are often used by authors use to call attention to the five most common organizational patterns. The following diagram, Figure 1, from Vacca & Vacca (2002) illustrates the signal words.
In 2005, Vacca and Vacca noted that reading signal words and phrases are important because when readers read and interact with the organization of the text, they are in a better position to retain and comprehend the information. Students must learn how to recognize and use the explicit and implicit relations in the text patterns that an author uses to structure the content, and this is particularly true when reading expository text.

**Literacy Instruction**

What constitutes effective literacy instruction? The question has been an ongoing debate for most of the past century. Collins & Cheek (1999) propose eight suggestions for effective literacy instruction.

- Effective teaching can be implemented in many ways; there is no one best way.
- Varied approaches and techniques must be used to provide instruction in reading.
- Instruction should be consistent.
- Instruction must be based on continuous assessment.
• Instruction should be flexible.
• Effective teaching requires that all school personnel work together as a team.
• Effective teaching helps students to apply their knowledge of reading strategies using a wide range of printed materials.
• Effective reading programs are designed to foster positive self-image and enjoyment of reading as well as to develop the reading process. (pp.176-178)

Literacy and Accountability Demands

The continuing emphasis on the five components of reading identified by the National Reading Panel (NRP, 2000), namely, phonemic awareness, phonics, fluency, vocabulary, and comprehension strategies, does not adequately prepare students for the more challenging expository texts of science and social studies that await them beyond third grade. Fang’s 2008 research contended that students find expository text alienating and difficult to read. Pressure for improved standardized-test performance and state standards related to informational text have created an intense focus for teachers to recognize that students must be able to understand expository text. The National Assessment of Educational Progress (NAEP; Grigg, Daane, Jin & Campbell, 2003), which serves as an audit for each state’s annual assessment of achievement in grades 3 through 8 as part of the No Child Left Behind (2002) legislation, indicated that fifty percent (50%) of fourth grade level text content required students to read narrative text, and fifty percent (50%) involved reading to gain information (Moss, 2005). We have a critical need to assist readers in the elementary grades to understand more about expository text, and help our students’ transition to reading to learn after they have emerged as readers that have learned to read.
No Child Left behind (NCLB) also mandated an extensive accountability system that involves the state and local education agencies, and specific responsibilities are assigned to those various agencies regarding data collection, analysis, and report data required a school to make Annual Yearly Progress. This student data is published in local newspapers, and on a state school report card, which information about school performance as mandated by the NCLB requirements, and the information regarding those reading scores must be provided to parents. This accountability underscores an urgent need to meet our students’ needs in the area of reading comprehension since reading comprehension is involved in all subject areas throughout the students’ school years from pre-kindergarten through twelfth grade.

Duke (2000) indicated that most early childhood and primary grade educators neglect expository texts in their classrooms while they may be overemphasizing narrative texts. Consequently, Hall (2002) concluded that many of our children are entering upper elementary unequipped to meet the increasing demands of understanding and comprehending printed text. This neglect of expository text in the primary grades that has been noted in studies by Chall, Jacobs, and Baldwin (1990) and Chall & Snow (1988) may be a major contributor to the prevalent decline in reading achievement after third grade.

Effective use of research-based reading strategies with expository text in early elementary classrooms may help students with reading comprehension related to expository text materials when students reach fourth grade. Chall and colleagues (1990) referred to this decline as the “fourth grade slump”, which is an overall decline in reading scores as children enter the fourth grade. Comprehension of expository text is integral to the success of readers beyond the skill instruction so prominent in the early elementary grades. Since the density, or amount of print on the page, becomes more difficult to read, teachers may need to teach explicit reading
strategies to assist the students with the more difficult expository text. There is a variety of research based reading strategies that teachers can use to help students understand the meaning of science expository text.

**Strategy-Based Instruction**

Strategy instruction helps students who struggle with the text become aware of, use, and develop control over learning strategies (Palinscar & Palinscar, 1984). Explicit teaching of the strategies provides an alternative to blind instruction (a method where students are taught what to do, but the instruction usually ends here). Explicit instruction, however, attempts not only to show students what to do, but also why, how, and when. Pearson (1982) concluded that such instruction helps “students develop independent strategies for coping with the kinds of comprehension problems they are asked to solve in their lives in schools” (p. 22). As a result, readers become successful readers in their everyday lives.

Interaction with expository text requires additional strategies that specifically address the demands of expository text. The strategies can help students cope with demands of the language of expository test, and should be connected by focusing on the functions that expository language serves in the presentation of information, structure of the text, and carried out in a manner that gradually removes the scaffolds in the instruction. As Yore (2004) described in his discussion of strategy instruction with science texts,

The instruction should be embedded in the actual text assigned and should reflect the interactive, constructive aspects of making sense of text and of effective explicit instruction….The selected strategy should be modeled by the teacher, practiced by the students with guidance from the teacher, used in controlled situations by students with assigned text, and transferred in other reading assignments and texts by the students (p.88).
The strategies approach to teaching reading comprehension strategies centers on the direct teaching of specific procedures, such as summarizing, making inferences, and generating questions, and using them in working with text (McKeown, Beck, & Blake, 2009). Strategy-based instruction can be viewed from the traditional perspective framework of before, during, and after reading. The strategies approach to teaching reading developed from models of thinking and learning processes, whereas the content approach of teaching reading stems from a model of text processing.

One crucial implication of the processing models is that the learners need to be mentally active to process text successfully (McKeown, et al., 2009). The strategy-based instruction model aims at engendering active student engagement with reading.

There is a significant body of research on comprehension of comprehension strategies. Designing effective reading comprehension instruction requires an understanding of how readers comprehend, based on both theory and research (Gill, 2008). Teachers with an understanding of the complex process of comprehension can make decisions about designing and planning instruction for effective reading comprehension instruction.

A constructivist theory of learning suggests that learners actively construct their own knowledge, and suggests that readers construct meaning by making connections between the text and their prior knowledge (Dixon-Krauss, 1996). One aspect of reading is the construction of meaning from text (Snow, 2002). The constructivist theory also suggests that comprehension improves when we actively construct our own representations of interpretations of the material that we read. Writing, creating graphic organizers or other activities can help students comprehend the text.
Dividing reading instruction into prereading, during reading, and postreading activities helps teachers design activities for each reading stage that will improve students’ comprehension. Additionally, separating the components of modeling and instruction into prereading, during reading, and postreading will provide opportunities for students to learn to use a variety of comprehension strategies and extend their comprehension of text.

There has been much recent work on comprehension that has focused on identifying common strategies that good readers use as well as studies regarding teacher training to teach the strategies. Pressley and Afflerbach (1995) identified several strategies that were shown to be effectively taught in several research studies: activating prior knowledge, generating questions while reading the text, visualizing the text, analyzing various story structures, and summarizing.

Comprehension strategies have been a focus in reading research, and a variety of researchers that agree that some strategies are effective for improving reading comprehension. Summarizing, retelling, making connections, visualizing, and predicting are common reading strategies used in reading instruction during pre-reading, during reading, and post-reading strategy instruction.

We live in an expository world. Students need to be taught how to use strategies to enable them to understand informational text. There is a broad literature base regarding comprehension instruction, and with nonfiction books available for emergent readers, students can read books on their instructional and independent reading levels. Consequently, teachers need to teach the strategies so that students can use the strategies independently before, during, and after they read informational texts.
Gill (2008) compiled the following information in Figure 2 below that displays a variety of sources that include similar lists of comprehension strategies that can be taught, as well as several comprehension strategies and activities for teaching them.

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Connecting</td>
<td>Making connections</td>
<td>Making connections</td>
<td>Using and creating schema</td>
<td>Using prior knowledge</td>
</tr>
<tr>
<td>Questioning</td>
<td>Questioning</td>
<td>Asking questions</td>
<td>Asking questions</td>
<td>Question generation, question answering</td>
</tr>
<tr>
<td>Purpose Setting</td>
<td>Visualizing</td>
<td>Creating images</td>
<td>Using sensory and emotional images</td>
<td>Making mental images</td>
</tr>
<tr>
<td>Visualizing</td>
<td>Visualizing</td>
<td>Creating images</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inferring</td>
<td>Inferring</td>
<td>Drawing inferences</td>
<td>Inferring</td>
<td></td>
</tr>
<tr>
<td>Predicting</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Retelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deciding what’s important</td>
<td>Determining importance</td>
<td>Distinguishing importance</td>
<td>Determining importance</td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>Repairing understanding</td>
<td>Monitoring comprehension</td>
<td>Monitoring meaning</td>
<td>Monitoring comprehension</td>
</tr>
<tr>
<td>Evaluating</td>
<td>Synthesizing</td>
<td>Summarizing</td>
<td>Synthesizing</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cooperative learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Use of graphic and semantic organizers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Recognizing story structure</td>
</tr>
</tbody>
</table>

Figure 2: Comprehension Strategies

Earlier research including the 1983 developmental work of Brown, Bransford, Ferrara, and Campione surmised that it might be possible to improve the reading comprehension of young children or less able learners by teaching them effective study strategies (Brown & Smiley, 1978). Manifestation of this work led to reciprocal teaching, an approach that taught young students to apply strategies of summarizing, questioning, clarifying, and predicting (Palinscar & Brown, 1984). Providing young readers with strategies to employ while reading
may facilitate their comprehension. These roots of strategy instruction led Pressley et al. (1992) to develop transactional strategies instruction (TSI), an approach in which the teacher explains and models strategies and uses these strategies to guide dialogue about text. The NRP Report (2000) concluded, “The past two decades of research appear to support the enthusiastic advocacy of instruction of reading strategies” (p. 4-46). The report identified seven strategies that the panel felt was solidly supported by evidence for improving comprehension: comprehension monitoring, cooperative learning, graphic and semantic organizers, question answering, question generation, story structure, and summarization. The effectiveness of the studies in the NRP (2000) provided an image of overall success with using the seven specific strategies.

In terms of which strategies are key tenets, with the National Reading Council (NRC) Report (Snow, Burns & Griffin, 1998) and the NRP report (2000), the list of strategies overlaps. The most recent research about the use of strategies advocates the use of multiple strategies, but which set of strategies should go in the “mix” is unclear (McKeown, et al., 2009). In the strategy-based approach, the teacher is the instructional agent. With the strategy-instruction approach, students learn to use specific procedures to guide their access to text during reading, and strategies instruction can be applied to any piece of text. At stopping points during the lesson, the teacher utilizes a strategy to prompt discussion and reminds the students to apply the strategy to the text. Exploring strategy-based instruction with elementary students using expository text will be fruitful and an avenue to glance into the minds of the students as they explore science text.

Strategy instruction includes four components: assessment, awareness, modeling and demonstration, and application. Vacca & Vacca (2005) illustrate an analogy between strategic readers and athletes. They made the comparison that teaching students to be strategic readers
provides experiences similar to those needed by athletes who are in training. In order to perform well with texts, students must understand the rules, rehearse, work on technique, and practice. A coach (the teacher) is needed to provide positive feedback, guide, inspire, and share the knowledge and experiences that he or she possesses.

Expository Text

The structure and syntax of text becomes more complex and demanding in content areas (Allington, 2002). While textbooks are a predominant form of reading material in classrooms, teachers also rely upon technical and trade books, periodicals, newspapers, the Internet, and other electronic texts (Vacca & Vacca, 2002). Understanding the language of expository text is critical to reading comprehension and student success. Students must have the ability to learn from the language of expository text, even when the topic seems unfamiliar and the reading is demanding (Alexander & Kulilowich, 1991; Barton, Heidema, & Jordan, 2002). Content area texts are conceptually dense and organized with information, so they demand special reading skills for inference and critical thinking (Allington, 2002), and to be able to infer meaning from the expository text material. There is a variety of difficulty of expository text in science beyond the third grade level, so students need teacher assistance and support in order to successfully comprehend the more difficult science texts and more difficult technical vocabulary beyond third grade.

Teacher’s Role

How can teachers design comprehension instruction? Gill (2008) contended that each text (and the demands the text places on the reader) is different, so the teacher’s knowledge—about the student’s developmental level and about comprehension instruction—is vital. The
following questions are appropriate for a teacher interview about how teachers preview expository text.

- How can students relate their prior experience to this topic?
- What vocabulary terms do they need to understand before they read this passage?
- How can I get my students interested in this topic?
- How can I provide a purpose for the reading?
- How can I promote student engagement?
- What strategies can I demonstrate or model using this particular text?

Effective teachers of reading provide explicit instruction in the basic components of reading and provide students with various teacher-guided opportunities to engage in and apply strategies to the reading of and writing and talking about texts (Pressley, 2006; Taylor, Pearson, Peterson, & Rodriguez, 2003, 2005). Active and interactive strategic processes, as concluded by Taylor & Ysseldyke (2007) by students are necessary for the development of good reading comprehension abilities.

In addition, the NRP (2000) concluded that the following types of comprehension strategy instruction were most effective: comprehension monitoring, use of graphic and semantic organizers, use of story structure, question answering, question generation, summarizing, and flexible use of multiple comprehension strategies in naturalistic contexts.

Besides instruction in the mentioned strategies, engaging students in high-level talk and writing about text has been found to enhance students’ comprehension abilities (Taylor, et al., 2003, 2005). Therefore, a crucial part of reading development occurs when teachers describe, model, and support students to direct their attention, choose actions during the reading, and decode print to the sounds in words. A crucial part of reading development is the shifting control
for using strategies—first in response to others and later as self-initiated strategies (Afflerbach, Pearson, & Paris, 2008). Being metacognitive (thinking about one’s own thinking) with explicit teaching, when teachers explain, model, and use reading strategies is also crucial to reading development. Teachers need to be able to break down the reading process into different parts so that the learner becomes aware of the parts, understands how they work together, and practices combining the parts into a skilled performance that is reading. Vygotsky (1934/1978) referred to this cognitive disassembly as “defossilizing” (p. 63) a skilled action, and it is not always an easy task for teachers to identify the possible sources of difficulty that the students may encounter, especially in the comprehension of expository text materials.

Classroom interventions that teach students how to be strategic readers include this metacognitive layer of discussion (e.g. Palinscar & Brown, 1984; Paris, Cross & Lipson, 1984; Pressley et al., 1994). Teachers need to explain how to think to their students, and model, describe, explain, and scaffold appropriate reading strategies for children. For example, using expository text, teachers can search for a main idea in a text and demonstrate thinking aloud to model their reasoning for each sentence or idea. Teachers can describe the differences between a main idea and a topic sentence, differences between explicit and implicit main idea, or differences between a main idea and supporting details in their discussion. Strategic teachers set a precedent for self-regulated learning that requires students to take responsibility for their learning that leads to independent practice and better understanding of the text.

Metacognition takes form in the internal dialogue that goes on inside a student’s head. Unless teachers explicitly emphasize the importance of conversation and dialogue in the comprehension process, students are unlikely to be aware of the importance of metacognition. In some research in 1999, The National Reading Council’s (NRC) research demonstrated that
children can be taught how to predict outcomes, reflect to improve understanding, and to plan ahead. Explicit teaching of metacognition strategies in context has been shown to improve understanding in physics, written composition, and problem solving, especially when language skills and science are taught in the context of each other (NRC, 1999). Therefore, teachers need to be trained to use explicit reading strategies that are integrated with the science curriculum.

Unfortunately, teachers are rarely trained to assess children’s reading in a strategic mode (Afflerbach, Ruetschlin, & Russell, 2007), consequently, most strategy assessments are informal and embedded in instruction, and it takes an insightful teacher to diagnose reading problems from specific reading errors (Afflerbach, Pearson, & Paris, 2008). Specific reading errors in students’ reading can be alleviated by ongoing and flexible assessment of comprehension. Ongoing and flexible assessment can include such strategies as signaling with gestures, or other means of authentic assessment procedures that work for particular students. The teachers’ goal of the use of flexible assessments is to monitor the students’ understanding and their comprehension of instructional concepts that are taught during instruction.

Kragler, Walker, and Martin (2005) found that the primary grade teachers they observed relied primarily on teachers’ manuals for content area instruction and found that the science and social studies textbooks the teachers used focused on assessing student understanding rather than helping them comprehend (Gill, 2008). Yet, the role of the teacher and content teachers is to be able to design lesson that help students comprehend specific texts and develop comprehension strategies that readers can use on many different types of text, including expository text.

Why do teachers still seem unsure about ways to help students comprehend? Liang and Dole (2006) suggested that information about research-proven instructional frameworks for teaching comprehension is not always easy to find. Not only must teachers make decisions about
which techniques to use, they must also find ways to fit these techniques into their routines for reading instruction. Since comprehension is so complex, teachers need an understanding of how readers comprehend, based on both theory and research. With that understanding, teachers can make decisions about research-based teaching strategies that are described in books and journals, and more importantly, design their own comprehension instruction based on that knowledge.

Statement of the Problem

Reading strategy instruction related to expository text in the elementary grades continues to be significant, especially in the content areas such as science. Research has demonstrated that when teachers infuse reading strategies into the classroom, student performance and learning also increase (Forget & Bottoms, 2000; McKenna & Robinson, 2002; Meltzer, 2001; Moore, et al., 1999; Snow, 2002; Tomlinson, 1995; Vacca, 2002). Strategy instruction has four components: assessment, awareness, modeling, and demonstration (Vacca & Vacca, 2002), and helps “students develop independent strategies for coping with the kinds of comprehension problems they are asked to solve in their lives in schools” (Pearson, 1982, p. 22). Students in elementary grades require teacher assistance to acquire strategies to comprehend expository text before they leave third grade. Teachers can model the strategies that will help their students with understanding specific vocabulary or use other background knowledge that will help students be able to comprehend the information that is used in expository text materials in the early grades.

Scaffolding instruction to provide teacher support for students until they can read successfully on their own is comparable to a child learning how to ride a bicycle. Bike riding is analogous to what teachers do every day when they scaffold instructional support to help students understand embedded meanings and information in science text materials. Students need
for information to be scaffolded to help students become independent learners in the early elementary grades.

The primary problem that was addressed in this study was to explore strategy-based reading instruction that teachers use with classroom groups of second, third, fourth, and fifth grade students’ related to expository science text materials. Perhaps the most important responsibility of educators in the primary grades is to ensure that all students become competent readers. Teachers facilitate students’ success to become lifelong readers for pleasure and information. However, teachers have traditionally been able to make their own decisions about how to use expository text in their classrooms. Since students are exposed to nonfiction stories and text in the earlier grades, teachers need to educate their students about how to use effective reading strategies so they can monitor their own understanding of informational print.

Comprehension is a process that takes place over time. Good readers actively construct meaning through interacting with what they read, and integrate that knowledge with what they already know. The comprehension process involves making connections with what we already know with what we knew before, during, and after we read new information.

Knowledge about science is built piece by piece by accumulating and storing pieces of information that add to our prior knowledge, or schemata. Strategic readers do not memorize new information, but are able to add those new pieces of information to the existing pieces of information that they have already learned. The degree of success in becoming a competent reader is typically established in the early grades (Francis, Shaywitz, Stuebing, Shaywitz & Fletcher, 1996, Juel, 1988, Torgesen & Burgess, 1998). The inequities that commonly divide our students are likely to continue (Snow, Burns, & Griffin, 1998) unless students become more competent with understanding expository text in the early elementary grades. This study will add
to the body of research about using strategy-based reading with expository science text in the elementary grades.

Research Questions

The purpose of this study was to explore reading strategy instruction with second, third, fourth, and fifth grade students. Although there are a variety of questions that warranted consideration within the area of reading instruction, the researcher chose to narrow the focus of this study so that an in-depth analysis could be conducted and inferences could be made.

The research centered on two central queries while conducting this exploration:

1. What reading strategies do elementary teachers use related to expository science text?
2. How, if any, are there similarities and differences in the use of reading strategies related to expository science text between second, third, fourth and fifth grade teachers?

Qualitative Inquiry

This exploration attempted to answer questions regarding second, third, fourth and fifth grade science teachers’ method of and reason for implementing reading strategy instruction in their science instruction using science expository text materials.

The following questions guided the interview process with the teachers:

1. How do elementary teachers perceive their role in assisting students to develop reading comprehension strategies related to science expository text?
2. How do elementary teachers model good literacy strategies?
3. Why are there barriers in using reading strategies with expository science text materials in grades 2, 3, 4, and 5?
Significance of the Study

What are effective strategies that influence readers’ comprehension of expository text?

Comprehension is viewed as the “essence of reading” (Durkin, 1993). Although comprehension is regarded as one of the five essential reading components by the NRP (2000), comprehension as a process began to receive scientific attention only during the last thirty (30) years. Such researchers as Markham (1977, 1981) studied the awareness that readers had of their comprehension processes during reading. The surprising findings by Markham’s research were that both young as well as mature readers failed to detect logical and semantic inconsistencies in the text. This discovery led to the identification as well as the teaching of strategies that readers could learn to enhance their comprehension (NRP, 2000, 4-39). In the cognitive research of the reading process, reading is purposeful and active (Pressley & Afflerbach, 1995). According to this view of comprehension, a reader reads a text to understand what is read, constructs memory representations of what is understood, and puts this understanding to use.

Instruction on text comprehension has been a major topic for the last two decades, and the idea behind explicit instruction of text comprehension is that teaching students to use specific strategies can improve reading comprehension. Instruction of strategies for comprehending during reading is a way to engage students by breaking through students’ passivity and involve them in their own learning (Mier, 1984). These findings merit a closer look into the specific reading strategies that elementary teachers use related to science expository text materials in second through fifth grade. There is a transition between using simple narrative stories with story lines to informational text materials in the content area of science after second grade. The expository science text increases in print density, utilizes technical vocabulary that is pertinent to the science topic, and becomes more complicated after second grade.
Limitations of the Study

As with many studies of similar complexity, limitations of this study existed and influenced the generalizability for this particular study. The researcher employed a multiple case study design using a single elementary school site for the research. Since the scope of the study can be viewed as narrow in focus, it can be generalized only to this study, and might be viewed as a limitation of this study. Due to the nature of the study and the teachers’ willingness to allow an outside observer, the researcher was able to gather insightful information using a group of six teachers who taught on a single elementary school campus site. While a larger population of teachers might have provided further insight, it was infeasible for this study. The researcher experienced time constraints due to the high stakes standardized testing schedule in the spring semester, and may be considered as a further limitation of this study.

The researcher made a decision to use six elementary teachers who volunteered to participate in the study, as well as the insight from a key informant who was a reading specialist, but served as a math coach on the campus. The key informant provided knowledgeable advice about how to narrow the pool from several volunteer teachers to a set of six teachers to serve as participants for this study. A conference with the principal occurred prior to the study, and the principal suggested that the researcher use volunteer teachers for this study since the teachers were feeling pressured by the time schedule for the spring testing dates. Although several teachers volunteered for this study, only two teachers from second grade and two teachers from the third grade participated as four of the six participants. One teacher from fourth grade participated in the study since she was the sole science teacher for the entire fourth grade population. One of the fifth grade teachers was chosen to participate because she volunteered to participate in the study, and provided an opportunity for the researcher to compare and contrast
similarities and differences about how six teachers used reading strategies in science instruction that were related to types of expository text across the grade levels ranging from second through fifth grade.

Teachers’ personal values as well as their attitudes towards reading strategy instruction may affect reading strategy instruction within their elementary classrooms. Demographic variables, including the socio-economic status of the student population, influenced the results of this study relating to reading comprehension and the choice of teaching strategies related to expository text. The elementary campus where this study was conducted housed a significantly high population of approximately four hundred students from low socio-economic backgrounds evidenced by the ninety-six percent free and reduced lunch student population. Ninety eight per cent-minority student populations ride school buses from other neighborhoods to the research site. Since the students used bus transportation to the elementary school from other neighborhoods, there was a high rate of absenteeism because many of the students missed the school bus each morning and had no other means of transportation to school.

While a purposive selection of six classroom teachers who taught second grade to fifth grade levels was utilized for this research study, a larger population of teachers might have provided a broader scope. The duration of the study was over a four-week period, so a longer period of time might have provided a more extensive range of information. The selection of the participants and the length of time for the study might be viewed as limitations for this study.

Standardized testing in the spring sometimes creates tension because teachers, students, and their parents are concerned about the standardized test outcomes. Consequently, some elementary schools experience “skill and drill” during the high stakes test preparation during the spring of the school year. At the beginning of this study, the campus principal informed the
researcher that the teachers would be in “the skill and drill” mode, and that the teachers and students would be concentrating on practicing for the standardized test. Consequently, the principal conveyed that there would be a minimal amount of time to visit during science instruction.

Paris, Wasik & Turner’s (1991) research had other names for drill and practice such as “skill and will” or “kill with drill.” The drill and practice that sometimes occurs with the standardized test practice frequently utilizes consumable student practice booklets that use sample questions to assist students with their review various text types. The drill and practice booklets are published commercially from various publishers who distribute high stakes testing practice materials. In this study, the students used practice test booklets in the third, fourth, and fifth grade, and may be considered a limitation of this study. The limited use of expository science print materials might be considered a limitation of the study.
CHAPTER II: REVIEW OF THE LITERATURE

Facets of Comprehension

The concept of comprehension is somewhat mysterious and difficult to unlock (Cheek & Collins, 1999). The mystery of the concepts surrounding reading comprehension has been troublesome for quite some time, so a closer look at students exhibiting weakness is comprehension is warranted, and there are several factors that contribute to this difficulty.

Comprehension factors have been studied by various researchers, and there has been much reading research focused on the use of students’ strategies and their understanding of challenging text (e.g. Palinscar & Brown, 1894; Pressley El-Dinary & Brown, 1992). Research has shown that students who are good comprehenders of text have been found to be more strategic than those who are less competent and that strategic sophistication may seem necessary for reaching expertise in a domain or field of study (Alexander, Graham & Harris, 1998; Alexander & Jetton, 2000). The use of strategies using expository text might support the findings of these studies.

Reading comprehension is defined by Reading First legislation as the “act or result of applying comprehension processes to obtain meaning from a graphic or textual communication” (NRP, 2000, p. 4-3). Prior to the NRP’s review of the research and the Reading First legislation some educators thought comprehension instruction should be delayed until after mastery of decoding skills was acquired.

Comprehension skills differ from other major components of reading. Decoding skills can be mastered through highly effective teachers’ instruction and most students can automatically use their basic skills to decode new vocabulary words. Comprehension skills
require students to continuously develop more advanced comprehension competencies through the application of self-guided thinking throughout every reading experience. This guided self-monitoring process is known as “metacognition”, or thinking about one’s thinking. Primary grade students’ comprehension skills need to be developed in three areas: literal, inferential, and metacognitive skills.

Literal comprehension is the ability to understand the exact meanings of words through identifying main ideas, connecting exact details, or other skills such as sequencing.

Inferential comprehension, a second level of comprehension, requires the students to gather meaning from the printed words that are not directly stated, and enables students to recognize and think beyond the author’s purpose and to combine literal comprehension with their own thoughts (Cain-Thoreson, Lippman & McLendon-Magnuson, 1997; Pressley & Afflerbach, 1995). Students must think about mental pictures, draw conclusions, and interpret characters’ motives when they employ inferential comprehension.

A third level of comprehension skill includes metacognition, and involves thinking about one’s own thinking before, during, and after reading. It also includes the “skill and will” (Paris, Wasik, & Turner, 1991) to overcome one’s own reading challenges, and allow students to remove decoding, fluency, or vocabulary difficulties that may interrupt the comprehension process.

Most students must receive explicit metacognitive process instruction or they will not learn how to engage these processes independently (Baker, 2002; Block, 1998, 2000; Block & Pressley, 2002; Keene & Zimmerman, 1997; Paris et al., 1991). Rather than memorizing information, students need to add new information to their existing categories of schemata, elaborate them through metacognition, and modify the information that is stored in the brain.
Many elementary students experience “skill and will” during the high stakes test preparation during the spring of the school year because some teachers and administrators believe that skill drills and practice will help students to be more successful on standardized tests. The drill and practice that occurs with the standardized test practice frequently utilizes student practice booklets that use sample questions in order to help students review various types of expository type questions. Most of the drill and practice booklets are selected by administrators and purchased from various publishers that publish high stakes testing practice materials.

Prior to 1990, many teachers taught comprehension by giving directions or asking literal questions after students read certain selected text passages. In 1991, Pearson and Fielding encouraged teachers to move beyond these traditions, and teach comprehension as a process. Through scientifically validated comprehension process instruction (CPI), many teachers have developed the ability to explain and teach an array of comprehension processes (Block, 2003; Block & Mangieri, 1995-96, 2003; Block & Rodgers, 2004). In some instances, multiple use of strategy instruction is embedded and integrated within a reading lesson and is more beneficial than the single strategy instruction that is predominantly used with isolated reading instruction.

Block, Rodgers, et al., 2004 research concluded that comprehension process lessons are taught in three types: teacher directed lessons that include demonstrations of comprehension processes, a one-on-one setting with the teacher providing individualized instruction, teachers using explicit direct instruction, and thirdly, lessons in which students choose which comprehension process they want to learn more about. The third type of lesson produces highly significant gains in children’s understanding because young readers become more metacognitively aware and motivated to learn since they are involved in choosing what is
important for them to learn next to improve their reading abilities. As students progress through the early elementary grades and into the intermediate elementary grades, metacognition becomes more important to understand expository text, especially in the content areas. Although fluency and automaticity are important factors in reading according to the NRP (2000), they do not replace the importance of students being able to use metacognition in the reading process.

Traditionally, researchers have theorized that reading fluency facilitates comprehension and aligns with automaticity theory (LeBerge & Samuels, 1974). In contrast, other researchers such as Young & Bowers (1995) and Kuhn & Stahl (2003) debated that the appropriate application of prosodic features combined with speed in word recognition plays an integral role in the ways that facilitating reading comprehension.

Jenkins’ groups’ findings in 2003 indicated that comprehension might facilitate fluency for higher ability readers, whereas weaker word recognition skills might limit fluency and comprehension development, especially in poor readers. In addition, the work of Fuch (2000) and colleagues underscored that understanding text and relating the text to prior background knowledge may help readers correctly anticipate words in connected text that they might otherwise struggle with if the words were not in context. Betty Garner, in her book entitled *Getting to Got It!*, conveyed that cognitive structures help students to make connections with prior knowledge and experience by bridging from the known to the unknown (Garner, 2007, p. 5). We know that students make sense of information that is shared with them during their reading, and as we listen to their connections, we show respect for their thoughts as well as encourage the students to bring their own experiences to the learning situation. Students are able to bridge the gaps between their own experience and what is being shared through discussion.
about the printed words in the text. Out of those shared discussions, meaning is constructed and misunderstandings are clarified during the reading comprehension process.

Proper phrasing and expression (prosody) can emerge as a by-product of the interdependent relationship between word reading efficiency and comprehension. The multiple processes that occur simultaneously in word recognition, syntactic knowledge, as well as prior background knowledge may account for the relationship that exists between fluency and comprehension.

A review of literature indicates that more research is needed in the area of reading comprehension instruction and its relationship to the other four essential components of reading (phonemic awareness, phonics, fluency, and vocabulary (NRP, 2000). This study adds to the body of research in reading strategy instruction by focusing on the teachers’ use of specific reading strategies that related to science expository text. Readers need to be able to decode and access word meanings with automaticity, as they comprehend the meaning of the printed text. If students are reading quality material, their knowledge of the world increases, including their vocabulary, with such richer world knowledge empowering future comprehension of topically related texts (Anderson & Pearson, 1984). Research indicates that teaching specific comprehension strategies permits students to read books with worthwhile content and allows students to potential develop literacy skills even though some of the students will not comprehend the text as well as some of their classmates.

Diversity, or eclecticism, in instruction is essential for readers to be able to construct meaning from text. Populations of students differ greatly in their needs and their responses to instruction, therefore a perceptive teacher can discover much about a child’s reading by
monitoring the student’s response to strategy instruction using research-based strategy instruction to build comprehension.

Reading comprehension, or making meaning of the printed word, is the ultimate goal of reading instruction. Since understanding the meaning of the text is most important, students must be able to understand the meanings and the words that are written using denser text and the more difficult technical vocabulary words that are used in science expository text. The increased density of the printed materials requires students to possess their own toolbox of mental reading strategies that empowers them to unlock meanings that are embedded within the expository science text. Therefore, attention needs to be given to research to develop additional effective research-based instructional strategies that will enhance students’ abilities to comprehend written words in expository text materials.

Studies Involving Strategy Instruction

During the last decades, many reading researchers have focused their attention on work-level skills because of the assumption that word decoding is the bottleneck of the meaning getting process (Pressley, 2002b; Snow, Burns, & Griffin, 1998). Research on the components that potentially influence comprehension has been on parallel paths for the past several decades, to some extent insulated from one another (Gaffney & Anderson, 2000). Research indicates that there is a definite need for further research in the area of strategy instruction.

Strategy instruction occurs within the context of real reading events. Strategies are not taught or practiced in isolation, but are blended into meaning-oriented discussions surrounding text. A teacher initially contributes more than the students in the discussions, through explaining and demonstrating strategic reasoning, and then transfers the responsibility of reasoning to the students as quickly as possible. The process of shifting control of strategic thinking from
teachers to students is known as the Gradual Release of Responsibility Model (Fielding & Pearson, 1994; Duke & Pearson, 2002). Eventually, the goal for readers is to use reading strategies automatically and seamlessly. None of us envisions having to get up from a reading session, find a pencil, and then make notes to our self about what is confusing in the text of what we are reading. For this reason, we frame our instruction in what Pearson and Gallagher (1983) call “the gradual release of responsibility” approach. Fielding and Pearson (1994) identified four components of comprehension strategy instruction that follow the gradual release of responsibility approach that include teacher modeling, guided practice, independent practice, and application of the strategy in real reading situations. As the teacher phases the responsibility to the student, students begin to model and scaffold the use of strategies for one another. A recent study (Reutzel, Smith, & Fawson, 2005), compared groups of second grade students who were instructed to use some research-based strategies as a set of strategies (comprehension strategies, gradual release of responsibility, collaborative learning, and interpretive discussion). Reutzel and his 2005 colleagues posited that the second grade group using the transactional strategy instruction (TSI) set of strategies, rather than single strategy instruction, recalled and retained more information when reading science texts.

Two examples of such strategies to use are the Think Aloud strategy and the reciprocal teaching strategy model that incorporates the gradual release of responsibility model with the think aloud strategy. Pressley and his colleagues in (1992) and Gaskins (2005) research suggested that many students come to use the strategies on their own, and seem to be able to execute the strategies independently and with less effort than when they were first learning to employ the strategies. Furthermore, Gaskins (1998, 1999, 2005) noted that when teachers utilize a multidimensional treatment, some children learn differently and through different modalities.
Studies Related to Expository Text

Comprehension is rarely addressed as an important issue in the primary grade reading curriculum, and the small amount of attention devoted to it is usually focused on narrative, not expository text (Duke & Pearson, 2002). Furthermore, the few studies on comprehension that have focused on students in kindergarten through grade three have seldom dealt with expository text (Dole, Duffy, Roehler, & Pearson, 1991). This matter is rather disconcerting considering the fact that students beyond grade three enter the world of thicker, denser texts that are expository in nature.

Chall, Jacobs & Baldwin (1990, p. 8) refer to what is referred to as the “fourth grade slump” in reading achievement. After third grade, students are exposed to denser text used in expository text materials. Without proper attention to the nature of expository text in the early grades, Brenhardt, Destino, Kamil & Rodrigues-Munoz (1995) emphasized that students remain unprepared for the comprehension demands that await them. The nature of expository text that requires the student to comprehend print materials with more density as well as specialized content area vocabulary presents different challenges than the traditional narrative text types that use characters in stories with story lines. Since narrative texts are predominantly used in the early elementary grades, often there is limited use of expository text materials for instruction in the elementary grades.

A number of researchers (Pearson, Roehler, Dole & Duffy, 1992) pointed out a need for increasing the role of reading comprehension in the early elementary grades. Some researchers blame the lack of attention to reading comprehension in the early grades is often referred to as the fourth grade slump. Manzo (2002) further explained that the phrase refers to the large number of students who master initial reading skills, but are challenged by the more complex
tasks that are required by subject area texts introduced in the later grades. The fourth grade slump of also referred to as the “fourth grade cliff” and Pearson and his colleagues related that students are falling off because of an overemphasis on decoding skills rather that larger concepts of the big ideas…all those things that literature is about” (pg. 15). Moore & Moore (1989) pointed out that there is evidence that difficult scientific concepts are understood better by students who are taught scientific content using literature. This research points toward a need for additional research regarding how teachers need to use reading strategies other than decoding to help students make meaning out of varieties of text, including expository science text.

A simple sequence of familiar events with story characters is usually presented in most narrative text. However, science expository text presents unique challenges to readers because the content in science is usually unfamiliar to the student. Stein & Trabasso (1981) found that ideas in expository text often represent complex abstract logical relationships instead of the familiar stories with amusing characters and events so often used in the elementary grades.

Additionally, there are several types of expository text structures that present challenges to elementary age readers. Meyer and Freedle (1984) and Meyer and colleagues (2002) listed five of these structures: description, sequence, compare-contrast, problem-solution, and causation. Other investigators including Anderson & Armbruster (1984) and Simonsen (1984) have similar lists.

Moreover, very few texts are written exactly according to one of the five common formats, and Meyer & Poon, (2001) illustrated that most authentic texts are combinations of two or more.

Duke (2000) contended that children need to be exposed to expository text as early in their reading career as possible in order to develop the skills they need to read from such texts. The denser and informational expository texts contrast with narrative texts that tell stories.
Science expository text materials are written to convey information about specific topics that are predominant in content area text materials. Many children in elementary school are not equally exposed to a balance of expository and narrative texts. In fourth grade classrooms across the United States, when students encounter more complex in the fourth grade, Leach, Scarborough, & Rescorla (2003) noted that there is a large drop in reading comprehension. Gregg & Sekeres (2006) research conveyed that teachers in fourth grade and beyond expect that students know how to gain meaning from expository text, when, in fact, they often do not. The imbalance of the use of expository versus narrative text in the early elementary grades is a likely cause for the “fourth grade slump” (Chall, Jacobs, & Baldwin, 1990, p. 8). Therefore, there needs to be more exposure to expository text materials in the early elementary grades before students enter third and fourth grade where the majority of the text is expository in nature.

Children have difficulty making sense of expository text. Sometimes the difficulties are caused by inadequate word recognition, but sometimes they are a function of problems related to comprehension— which Baker & Brown (1984) attribute to a passive approach to the reading task, limited background knowledge, or often, poor metacognition. Both poor and relatively good readers experience problems with comprehension.

Well-structured text that presents information in a clear and logical order is easier to comprehend than poorly structured text (L. Baker & Brown, 1984; RAND Reading Study Group, 2002). Englert and Thomas (1987) studied four types of expository text structure that included description, enumeration, sequence, and comparison-contrast and their research noted that regardless of the type of structure, older students are more able to use the cues inherent in well-structured text than younger children. Furthermore, Dickson and colleagues (1998) and Wong & Wilson (1984) illustrated that good readers are more able to use clues in well-structured text than
poor readers. Consequently, there is opportunity for additional research on the elementary level regarding science expository text and text structure.

A few research studies regarding expository text structure at upper elementary level in grades 4-6 have demonstrated the effectiveness of instruction in text structure; whereas, Anderson and Ostertag (1987) focused on a single structure, problem-solution.

However, none of the literature that Dickson et al., (1998) reviewed dealt with expository text at the K-3 level. There are a few descriptive studies below fourth grade level. Danner (1976) studied second graders and found that recall and clustering of sentences by topic were greater for topically organized passages than for disorganized passages. Most of the second graders were able to summarize the main idea of the passages, which indicated that they had basic organizational skills. However, they found it difficult to detect and describe differences in passage organization, which suggests that second graders lack awareness of the usefulness for learning and memory. A study by Lauer (2002) with second graders reading problem-solution texts confirmed Danner’s conclusions that the children were better able to answer questions about and summarize texts when the texts were well structured. However, the students’ overall scores were low. In contrast to Danner’s study, in which the texts were read orally to the students, the Lauer study required the students to read the text independently.

More recently, there has been an emphasis on a greater presence of expository text in the primary-grade classrooms. Duke (2000) observed 20 first grade classrooms across 10 school districts and found minimal use of expository texts. Duke emphasizes the importance of exposing primary school students to such text. She and others including Pappas (1993), have shown that emerging readers can recognize expository language and recall the content of expository trade books (Moss, 1997), and argues that additional exposure to expository materials
will enhance these already existing abilities and prepare the children for their work with expository text in later grades.

A review of the literature indicates that the results of studies that reported the effects of text structures on second graders’ comprehension included Danner (1976) and Lauer (2002); furthermore, the observations and recommendations of Duke and Kays (2000) suggested that primary grade students are likely to be suitable candidates for the types of focused comprehension instruction that Dickson (1999) found to be successful with older students.

Rather than waiting until the student has completed reading a piece of particular text, we expect students to be able to employ reading strategies that assist them to make meaning of the print, as well as clear up any misconceptions or misunderstandings, confusion, and questions that they have during reading (Harvey & Goudvis, 2007, p.191). Keene and Zimmermann (1997) developed some generic questions for reading strategies that included making connections to prior experiences, questioning confusing text, visualizing the text, inferring the main ideas in the text, determining the important ideas contained in the text, and synthesizing the text by sharing new ideas or information gained from the particular piece of text.

Results of these studies lend to the body of research for expository text with primary school children in the future.

Scaffolding Instruction using Expository Text

Expository texts, in contrast to narrative texts that tell stories, are written to convey specific information about real life topics. Duke (2000) indicated that children need to learn how to read expository text as early in their career as possible so that they can develop the skills they need to learn from informational texts throughout their lives. Students need to be able to successfully transfer information from expository text and apply it to their own daily lives.
Planning reading instruction using expository text necessitates paying attention to three main issues: building and activating background knowledge, teaching vocabulary, and scaffolding instruction using expository text. Gregg and colleagues in (1997) conveyed that since teachers have children with a wide range of reading abilities, teachers are not always equipped to serve the diverse needs of the students.

Moreover, Chall and colleagues (1990), Duke (2004), and Smolkin & Donovan (2001) concluded that children make the most progress in reading when the strategies are connected to the students’ own background experiences, when students are challenged and supported at a level just above their ability to read easily on their own by scaffolding reading instruction, and when students are engaged in meaning-making conversation about the texts.

Pressley (2000, 2002a, 2000b) conveyed that text comprehension is not only about strategies, but also depends on students’ background knowledge and their word-level skills. Teachers in the early elementary grades spend a great deal of instructional time assisting children to see and understand phenomena (things) and processes (actions) in the world around them. Early experiences with science instruction can deepen children’s understanding of science and how science connects with the world around us.

Science lessons are full of activities that require students to identify, describe, and categorize objects and processes. Many of these objects are not common in the lives of the children due to reasons of geographic distribution, size of objects, danger, or the cost of the objects (Gregg & Sekeres, 2006). Objects such as wild animals, the position of the sun in the Arctic, or icebergs are examples of these types of objects that are not always available for students to experience. Similarly, many scientific processes such as the water cycle or migrations of particular species of animals are processes that children may not directly see.
Children’s interest in particular phenomena or processes provides motivation to learn more about the topics using expository text materials. As students move out of the primary grades, more of their reading materials are presented in an expository style (Collins & Cheek, 1999, p. 291). Children need to learn how to read expository text as early in their reading career as possible in order to develop the skills that they need to learn from such texts (Duke, 2000). Many children are not exposed to expository text or informational books, so they naturally have less opportunity to use reading strategies with expository material, yet informational text is frequently used in science textbooks for the elementary student. Therefore, it is necessary for teachers to plan instruction for expository text carefully while focusing on building and activating background knowledge, teaching vocabulary, and scaffolding instruction for the wide range of reading abilities within the elementary classroom (Gregg & Sekeres, 2006). Skills of reading to learn develop over time and must be intentionally taught through the acquisition of language fostered through classroom discussions of suitable texts (Smolkin & Donovan, 2001). Children bring to the classroom large amounts of knowledge from their background experiences, or lack of them, so there needs to be a variety of informational texts to add knowledge to their existing schemata.

Harvey & Goudvis (2000) developed a huge variety of strategies to structure children’s knowledge sharing, and these activities enable teachers to make children’s knowledge sharing public, so that all the children in the class share the knowledge.

Recent research suggests that comprehension of text is genre specific. Duke (2000) noted that children best learn to read and write texts of particular genres when they experience them in the classroom. Flood & Lapp (1991) concluded that children need direct instruction in reading strategies to learn from expository texts, including modeling the strategy, providing guided
practice and feedback, and providing time for independent practice for the children to practice the activities themselves. Supporting the reading of expository text depends on scaffolding children’s comprehension of the ideas that are being conveyed in the particular text.

Teachers often assume that what children can read, they can comprehend. Scaffolding expository text is important because direct instruction is essential for children to learn to read and reading to learn. For example, Chall (1990), Duke (2004), and Smolkin & Donovan (2001) all concluded that students need to be challenged and supported at a level just above their ability to read easily on their own and engaged in meaning-making conversations about suitable texts they are reading. Flood & Lapp (1991) illustrated that teachers can use several strategies to structure children’s experiences in reading expository text, including modeling a strategy, providing guided practice and feedback as the students work at it themselves, and providing time for independent practice. Greeno & Hall (1997) emphasized that scaffolding expository text for students to give them the tools they need to create mental structures is important because expository texts work differently from familiar narrative texts because of the way the two types of texts are structured.

Providing multiple readings of texts can provide a frame to scaffold instruction for specific comprehension strategies. When children alternate reading with content-based activities, their reading helps them understand what they are reading. Even relatively accomplished third graders may not be able, on the first or second reading of a text passage, be able to extract the meaning from expository text. Some students may be able to decode all the words in the text, but be unable to comprehend the meaning of what they have just read because of their lack of experience with using expository text. The lack of exposure to equal amounts of narrative and
expository text has left many students without specific strategies for making sense of expository text used in science and social studies printed materials.

Summarizing is another useful comprehension strategy. Summarizing helps children keep necessary information from the text in their minds, and provides opportunities for them to create mental models as new concepts appear. Gregg & Sekeres (2006) observed that the summaries may be oral or written because sometimes the task of writing the summary may interfere with the thinking that is necessary to synthesize the information from the material they are reading. Summarizing is a useful strategy to use with expository text in the elementary grades.

A third strategy for scaffolding instruction using expository text is to have the students transform the text into a visual form, such as sketching, drawing a map, a picture or a diagram. These tasks sometimes necessitate multiple readings of the text, as children attempt to capture the information that can be visually represented. Often, as Larkin & Simon (1987) pointed out, the spatial relations among the expository text information serve to make distinctions and similarities among them salient, leading to increased comprehension. Visual forms of texts include graphic organizers.

A fourth comprehension strategy is for children to formulate questions as they read about the text. Training students to ask questions during reading help them to construct a mental model of what is important in the text, and make connections to what they know and what is to be learned. Pearson and Gallagher (1983) suggest three categories of text-based questions: those that can be answered from the text itself, or text explicit; those that can be answered by making an inference from the text, and those that can be answered by importing knowledge acquired
elsewhere, or script implicit. All three types of questions can be explicitly taught to children and practiced with expository text materials.

National Concern

Between 1992 and 2005, Perie, Grigg & Donahue (2005) claimed there was no significant change in the percentage of fourth graders reading at or above the “basic” category in the United States. There has been no previous time in history when the success of nations and people has been so dependent on their ability to learn. National concern continues to grow regarding the current state of the educational system in the United States. The research by Lee, Grigg, & Donahue (2007) and Snow (2002) contended that our students were falling behind students in other countries on various measures of academic achievement, and in particular, on measures of reading comprehension. Taylor, Pearson, Clark, & Walpole (2003) and Pressley (2002) concluded that teachers rarely provide instruction on strategies that emphasize reading comprehension. Research indicates that as a result of the national concern about the ability to produce lifelong readers in our society, there is a need for increased teaching of reading comprehension strategies in the content areas that primarily use expository text.

A response to the reading crisis has been the attempt to ensure that every teacher is a teacher of reading, and that reading instruction is not regarded as the sole responsibility of the English and reading teachers. However, we are still awaiting this focus to show significant changes in the ways that content area teachers provide instruction above third grade in the elementary school. Teachers need an extensive and flexible tool kit from which to pull effective practices and strategies, and possessing such a tool kit is critical for teaching content area knowledge and skills. Brozo & Simpson (2007) suggested that effective content area tool kits

41
might be especially helpful to struggling readers and children with disabilities. What should be contained in the tool kit?

Brozo & Flynt (2008) asserted that teachers who design literacy experiences based on principles of motivation and engagement will have in their instructional tool kits a range of strategies. Instructional tools in a teacher’s literacy tool kit may include the following:

- Elevating self-efficacy (Pajares, 1996)
- Engendering interest in new learning (Guthrie & Humenick, 2004)
- Connecting outside with the inside school literacies and learning (Pintrich & Schunk, 2001)
- Making an abundance of interesting text available (Sadosi, Goetz, & Rodriguez, 2000)
- Expanding student choices and options (Guthrie & Davis, 2003)
- Structuring collaboration for motivation (Anderman, 1999)

Perhaps the most valuable component of the teacher’s toolkit is a reflective and experimental disposition to use what works in the classroom with a given set of students. Hattie (2003) claims that the teacher, more than any other factor, is the greatest source of variance in student achievement. Furthermore, Brozo & Flynt (2008) claim that this reflective nature is a catalyst for experimenting to discover what works with their students, and Cooter & Flynt (1996) suggested that teachers need to create learning environments that are connected to the real world and carefully constructed to meet the individual needs of their students.

Current trends and national concerns place heavy demands on teachers so they can ensure that all students achieve high levels of literacy, and teachers often feel overwhelmed by the challenge.
Often, the teachers experience uncertainty about how to teach specific reading comprehension strategies in an effort to foster the integration and evaluation of the informational texts above the third grade level.

**Expository Text Literacy**

Incorporating informational books and other forms of expository text into classrooms in the early grades has a number of benefits. One benefit is that many children enjoy informational books more than the traditional narrative stories that populate most classroom libraries and reading curricula. Secondly, Duke (2004) found that informational text encourages the home-school connection, as they more closely resemble the topics that parents discuss and read about with their children at home. Furthermore, research by Smolkin & Donovan (2001) supported the belief that there are often more substantive, meaning-making conversations between teachers and children when they read aloud from informational texts rather than narrative story texts. Those conversations between students and the teacher and student to student, as well as the experiences in the home environment are vital to building children’s understanding of how to read to learn while they are learning to read.

Many children have not received sufficient instruction in the skills and strategies they need to understand expository text. Across the curriculum, science teachers often use textbooks, trade books, and electronic sources as a means of teaching the content that is relevant to their class. Unfortunately, many of these students are unable to use appropriate reading strategies to enhance their learning in the science classroom because many teachers are at a loss as to how to teach reading strategies using expository text. Most educators agree that all students, including students who are readers of science text materials, need to meet high standards for literacy success.
The RAND Reading Study Group report by Snow, Burns & Griffin (1998) commissioned by the U.S. Department of Education has identified that literacy proficiency is reached when a reader can read a variety of materials with ease and interest, can read for varying purposes, and can read with comprehension even when the materials is neither easy to understand nor intrinsically interesting… [P]roficient readers…are capable of acquiring new knowledge and understanding new concepts are capable of acquiring new knowledge and understanding new concepts are capable of applying textual information appropriately, and are capable of being engaged in the reading process and reflecting on what is being read (p. xiii)

The RAND Reading Study Group (2002) recognized features of conventional texts, such as varying genres, structures, reading levels, and subject matter that created potential challenges for readers. "Processing the text involves, beyond decoding, higher-level linguistic and semantic processing and monitoring. [These typically include] skimming (or getting only the gist of text) and studying (reading texts with the intent of retaining the information for a period of time)" (RAND Reading Study Group, 2002, p. 15.) Retaining information is important for reading comprehension, and is difficult for some elementary students.

Snow Burns & Griffin (1998) also revealed that sources of reading difficulties for many readers can be biological, instructional, or even environmental. The three elements of reading comprehension—the text, the activity and the reader—occur within a larger sociocultural context that influences how literacy learners interpret and transmit information (RAND Reading Study Group, 2002, p. xv). The RAND group report highlighted the importance of reading comprehension as a social activity. Other researchers including Gee (2001), Rosenblatt (1983) and Tovani (2000) supported the same notion.

Literacy refers to the ability to read and write. As students progress through the grades, the academic demands placed on them increases, often in the form of reading expository text
materials. Larry Yore (2004), a well-known science educator, struggled as a young reader. He believes that language is both a means of doing science as well as communication through which we construct scientific claims. Yore (2001) implemented a multiple case study and revealed some information about scientists and how they use language. Yore’s research exposed that language is important to scientists because it helps them to read scientific information, plan, draft, and revise those scientific drafts.

In addition, Yore (2002) noted the scientists’ use of scientific language and writing expertise, facets of enculturation into expert discourse communities, and dynamics of collaboration groups were apparent (Saul, 2004, p. 77). Yore’s work provided a clear vision of science literacy, which is the central focus of the United States National Science Education Standards (National Research Council [NRC], 1996). Theoretical frameworks for English language arts and science reform documents American Association for the Advancement of Science (AAAS), 1993; National Council for the Teachers of English (NCTE) and the International Reading Association (IRA), and the National Reading Council (NRC), 1996, and Rutherford & Algren, (1990), framed the criteria that incorporated language arts oriented tasks into science inquiry instruction.

Scientific literacy was the first term that was defined for users of the National Science Standards that were published by the National Research Council (NRC) in 1996. The NSES offered the following definition for both researchers and practitioners:” Scientific literacy is the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity” (NRC, 1996, p. 22). This definition asserts that a scientifically literate person can:
• Ask for, find, or determine answers to questions derived from curiosity about everyday experiences
• Describe, explain, and predict natural phenomena
• Read with understanding articles about science in the popular press
• Engage in social conversation about the validity of the conclusions of the articles
• Identify scientific issues underlying national and local decisions
• Express positions on current issues that are scientifically and technologically informed
• Evaluate the quality of scientific information on the basis of its source and the methods used to generate it
• Post and evaluate arguments based on evidence and apply conclusions from such arguments appropriately. (NRC, 1996, p. 22)

The AAAS, IRA, NCTE, and NRC are dedicated to research and excellent practice in both literacy and science, and each organization advocates common practices that value student engagement, appreciate cultural diversity and difference in home languages, and agree that educators must teach for understanding. The National Research Council (NRC) published the United States National Science Education Standards (NSES) in 1996 after four long years of debate.

After four years of debate, the NSES Standards were proposed to move toward scientific literacy. The standards to move towards scientific literacy proposed more emphasis on working with others than the previous emphasis on working alone.
The NSES Standards were proposed to move toward scientific literacy. The information below in Figure 3 is from the NRC (1996) and indicates where “less emphasis” and “more emphasis” needed to be placed in order for teachers to assist students to attain scientific literacy.

<table>
<thead>
<tr>
<th>Less Emphasis on</th>
<th>More Emphasis on</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treating all students alike and responding to the group as a whole</td>
<td>Understanding and responding to individual and students’ interests, strengths, experiences, and needs</td>
</tr>
<tr>
<td>Rigidly following the curriculum</td>
<td>Selecting and adapting the curriculum</td>
</tr>
<tr>
<td>Focusing on student acquisition of information</td>
<td>Focusing on student understanding and use of scientific knowledge, ideas, and inquiry process</td>
</tr>
<tr>
<td>Presenting scientific knowledge through lecture, text, and demonstration</td>
<td>Guiding students in active and extended scientific inquiry</td>
</tr>
<tr>
<td>Testing students for factual information at the end of the unit or chapter</td>
<td>Providing opportunities for scientific discussion and debate among students</td>
</tr>
<tr>
<td>Maintaining responsibility and authority</td>
<td>Continuously assessing student understanding</td>
</tr>
<tr>
<td>Supporting competition</td>
<td>Supporting a classroom community with cooperation, shared responsibility, and respect</td>
</tr>
<tr>
<td>Working alone</td>
<td>Working with other teachers to enhance the science program</td>
</tr>
</tbody>
</table>

Figure 3: Attaining Scientific Literacy

Academic reading and writing tasks that students encounter in upper elementary grades require a significant amount of reading to substantiate the learning of new and often complex data. Researchers Alexander & Jetton (2000) emphasized that as academic demands on our students becomes more complicated, explicit reading instruction decreases. Moreover, Michael Kamil (2000) posited that the ability to comprehend expository text in content-area texts is
critical to our students’ academic success. Elementary students need to read science expository materials to be successful readers beyond their elementary school years.

Reading ability is a key predictor of achievement in mathematics and science (ACT, 2006), and the global information economy requires today’s American youth to have far more advanced literacy skills that those required by any previous generation (Snow, Burns & Griffin, 1998). Research studies indicate a critical need for attention to the unique challenges of improving reading instruction.
CHAPTER III: METHOD

The purpose of this exploration will focus on reading strategy instruction related to expository science text. The study focused on six teachers who taught science in classrooms in second, third, fourth, and fifth grade. A multitude of questions may deserve to be addressed within the area of reading strategies related to the use of expository text materials in the elementary grades. However, the researcher has chosen to narrow the focus of this study in an effort to conduct an in-depth analysis, allowing inferences to be formed. This research exploration focused on two fundamental questions:

3. What reading strategies do elementary teachers use related to expository science text?

4. How, if any, are there similarities and differences in the use of reading strategies using expository science text between second, third, fourth, and fifth grade teachers?

A multiple case study design method with six elementary teachers was utilized to determine which reading strategies were being used with expository science text in second through fifth grade on the research site. The exploration used intact classes of second, third, fourth, and fifth grade classes at an elementary school site that was located near a university in Louisiana. The school’s location is not of primary importance since the focus of the study explored the use of reading instructional techniques related to expository science text. The concentration of this study involved observation and interviews with six classroom teachers who used expository text in elementary science classrooms. The researcher also requested the informed opinions of the principal as well as a key informant who was a reading specialist that served as a math coach on the campus. Both the principal and the key informant provided insight throughout the study.
The observations focused on Snow’s (2002) research with elementary teachers’ use of reading strategies in pre-reading, during reading, and post reading. This study explored reading strategies elementary teachers used that related to science expository text passages.

For the purpose of this multiple case study, the researcher collected information across grade levels spanning from second through fifth grade. This exploration included two second grade teachers and two third grade teachers, as well one fourth grade science teacher who was responsible for teaching all the fourth grade science classes at this school. Also included in this study was one fifth grade teacher who taught her own science classes as well as the other subject areas. The only teacher who did not teach all the subject areas was the fourth grade teacher because the fourth grade on this campus was divided into departments that had teachers that taught specific subjects, including science, social studies, and math. However, all teachers on the campus involved in this study taught their own reading classes in the morning. Furthermore, the majority of the classroom observations took place in the afternoon, after the morning structured reading block, over a four-week period. The researcher gathered information from classroom observations of science instruction in each of the six science classrooms in second through fifth grade. In addition to the observations that were conducted in the natural setting of science instruction in the teachers’ classrooms, individual and frequent informal interviews were conducted with the campus principal and a key informant, and each of the six teachers who participated in this study. The individual teacher interviews were conducted in the teachers’ classrooms when there were no students in the classroom, so the researcher and the teacher were able to have face-to-face interviews that were recorded on a tape recorder. The teachers agreed that a face-to-face interview using a tape-recorded would be beneficial to both the researcher and the teachers, and the teachers agreed to a time and place that was convenient for the interview.
Additional in-depth information about each of the teacher participants was provided through the interviews. The interview questions provided information about the teachers’ backgrounds and education, their philosophy about and their use of instructional strategies in reading and science, their classroom management, and the teachers’ assessment procedures. Information from the interviews, field notes, and classroom observations were used to inform the researcher about how the six teachers used reading strategies related to science expository text across grade levels 2-5.

Characteristics of Qualitative Research

Qualitative researchers can explore and capture virtually any information that is not quantitative in nature. This exploration employed the method of multiple case studies, an intensive study of a specific individual or specific context (Trochim, 2008, p. 147). Case studies are used extensively in business and law, and the level of analysis varies from a particular individual to the history and organization of an event. Trochim (2008) postulates that there is no single way to conduct a case study, so a combination of methods is often used. In this situation, the multiple case study combined interviews, observations, and field notes to gain insight about how a group of elementary teachers used reading strategies related to expository science text in second through fifth grade.

Every social situation can be identified by three primary elements: a place, actors, and activities (Spradley, 1980, p. 29). Weaver (2002) identified three major factors that affect reading comprehension: the reader, the text, and the situation. The focus of this study explored the natural setting of classrooms and used repeated classroom observations during science instruction related to science expository topics.

With repeated observation, individual acts began to fall into recognizable patterns of activity. Repeated classroom observations provided insight about how elementary teachers in this
study employed instructional reading strategies and how those strategies were related to expository science topics across the different grade levels. Passive participant observation (Spradley, 1980, p. 59) allowed the researcher to be immersed in the natural setting of a classroom and directly experience and record the researcher’s own perceptions.

According to Spradley (1980), there are given criteria for selecting a social setting for a qualitative research study, so the social setting, or setting of this study, was selected on simplicity, accessibility, unobtrusiveness, permissibleness, and frequently recurring activities. Simplicity, according to Spradley, refers to the ease with which the researcher can carefully focus on single situations and make inferences and determinations. The accessibility of the elementary classrooms was quite conducive for this exploration. Since the school campus was located close to a university, the elementary students were accustomed to having frequent visitors and observers in the classroom, so the researcher was unobtrusive. According to Spradley (1980), there are varying degrees of permissibleness that can be sought depending on the nature of the study. Since this study required the permission of the principal and the six participant teachers, the researcher had limited entry.

Frequently occurring activities were key to this exploration, so a repeated occurrence of events and the teachers’ use of reading strategies related to expository science text could be effectively verified.

Qualitative researchers support different standards of judging the quality of qualitative research. Those standards include credibility, transferability, dependability, and confirmability. Credibility of qualitative research involves establishing results that are believable from the perspective of the research participants. Since one of the purposes of qualitative research is to describe or understand phenomena from the participant’s eyes, the participants are the ones that
can judge the credibility of the results (Trochim, 2008). The researcher becomes accepted as a natural part of the culture that is being observed. In this case, the researcher was able to immerse into an elementary classroom and observe science instruction. Spradley emphasizes that immersion is the time honored strategy that is used by most ethnographers (Spradley, 1980, p. 145). Researchers are able to identify themes through listening to informants, immersing into the culture, and generating insights into the themes that emerge from the culture. In the case of this study, the researcher could become immersed in an elementary school setting with a high poverty school population.

Transferability refers to the degree to which the results of the study can be generalized or transferred to other contexts or settings. The qualitative researcher can enhance transferability by focusing on doing a thorough job of describing the research context and being responsible for making judgments about how sensible the transfer is.

A traditional quantitative view of reliability is based on replicability or repeatability. However, the qualitative research relates reliability to dependability, which emphasizes the need for the researcher to account for the continually emerging changes that occur in the setting from which the research occurs, and the researcher’s responsibility is to describe the ever-changing research context as needed.

Qualitative research assumes that the researcher brings a unique perspective to the study, whereas, confirmability refers to the degree to which others can confirm the results of the study. The key informant in this study was a participant observer, and added valuable insight during the course of the study, so the researcher was able to use the key informant’s insight as part of the information that was gathered in this study. The key informant’s participation and insights added confirmability to this qualitative study.
Simply stated, qualitative and quantitative research methods are two very different methods of research, which often fulfill different objectives and help to discover different conditions in a given situation. With prominent researchers weighing in on the qualitative versus quantitative debate, tensions elevated until finally pragmatists concluded: use what works in each particular situation (Ortlieb, 2007). During the past two decades, educational researchers have begun to acknowledge qualitative research as a germane methodology, while other fields such as anthropology and sociology have used qualitative research methods for over a century.

Policymakers have criticized some qualitative research as too subjective an interpretation of experiences, instruction, genetics, and other factors. As Labov suggested, “The central prerequisite for advancing the teaching of reading is to graph the process of learning to read through the nonreader’s eyes and ears—we must understand what is like not to be able to read” (Labov, 2003, p. 129). Qualitative research can help us to understand how it feels not to be able to read “well enough” for a setting, to participate in a reading intervention, or to provide intervention to a set of students. When considered systematically, over a period, qualitative data can provide insights about why students respond to certain instruction, and provide perceptive clues about what and how to teach the student.

For example, these are words from a child named Jason, which were cited in a reading research article by Hinchman (2005):

> Reading is looking for little words in the big words and knowing enough words. Hey, you know. I’m the third worst reader in my class. I know, because the other kids read books with more pages that I do.  
> Jason, age 8 (Hinchman & Michel, 1999, p. 578)

Jason, a third grader, helped confirm Kathleen Hinchman’s beliefs that children’s insights provide an important window through which to view their literacy, as Johns (1972) and others
(Michel, 1994; Taylor; 1994) have long suggested. Jason’s quotation mentioned above provides insight that echoes the literacy programs and other sources of information in his life. These sources have left Jason with limited strategies for word identification as well as a stigma of not measuring up to his classmates.

Qualitative research can help us to understand the variations in what it feels like not to read “well enough” for a setting or to be able to participate in a small group reading intervention. This exploratory study adds to the body of research that affects local, state, and federal policy that should be able to account for as well as address Jason’s insights:

Human beings act toward things on the basis of meanings that the things have for them……the meaning of such things is derived from, or arises out of, the social interaction that one has with one’s fellows… [and] these meanings are handled in, and modified through, an interpretive process used by the person dealing with the things he encounters (Blumer, 1969, p. 102).

One of the qualities of qualitative research is that the researcher can triangulate some sources of data (Corbin & Strauss, 2008). Because of the inherent limitations to data collection methods, it was necessary to use several of them in order to allow the researcher to examine the data from multiple viewpoints. Several sources of data included observations, field notes, interviews from the principal, key informant, and six teachers that provided qualitative data. This study was conducted over a period of four weeks. The multiple sources of information provided a more accurate picture and a better understanding of the observable facts being studied. Qualitative research involves an analytic process that is flexible, relaxed, and driven by the insight of the researcher through interaction with information that is gathered during the study.
Descriptive language is used in qualitative research, and use of imaginative language is used to explore humans’ lives in a natural setting. In this study, the natural setting was a variety of elementary teachers’ science classrooms that were housed on an elementary campus site.

A qualitative method of interviewing can serve as a mining tool to provide opportunities for the researcher to mine for information, or discover gems, about how teachers used reading strategies related to expository text for science instruction. One analogy used by a researcher is that qualitative research is like discovering “gems” (Marks & Dollahite, 2005). This mining analogy can also be used to illustrate how the interviewer was able to “mine for gems” while interviewing teachers about strategies they used in science classes that related to expository, non-fiction, or informational text or topics. The researcher recorded those gems in field notes from interviews and the classroom observations.

For this study, the researcher participated in the setting as a spectator so as not to distract from the instructional setting of the elementary classrooms. Since the campus site was located near a university, the students were accustomed to university students entering their classrooms and participating in the classroom activities. The relaxed setting provided opportunities for the researcher to be unobtrusive, so the researcher was able to observe the teachers from various parts of the classrooms during the observations with little attention being drawn to the researcher. This study had limited entry, so the researcher obtained permission from the principal and consent from each of the teachers before the beginning of the study.

Qualitative researchers can become immersed in the research. Though some quantitative researchers say qualitative research has no valid findings or that the findings are only based on a few case studies (Strauss, A. & Corbin, J., 1998), qualitative data can provide an opportunity to
inform policy and adhere to the federal and state regulations that were set by the National Reading Panel in 2000.

A statement by John Dewey sums up the definition of qualitative research:

If what is designated by such terms as doubt, belief, idea, conception, is to have any objective meaning, to say nothing of public verifiability, it must be located and described as behavior in which organism and environment act together, or inter-act.
(Dewey, 1938, p. 32)

According to Creswell (2007), there are three significant key differences between qualitative and quantitative research designs. First, the logic informing qualitative research is inductive and describes particular situations, experiences, and meanings before developing explanations. Secondly, according to Creswell, qualitative designs are both emergent and flexible. Because inductive reasoning is emphasized, the researcher, the setting, and the subjects are subject to development and change, and are flexible, as the patterns emerge throughout the study. Creswell (2007) believes that not all of the aspects of a qualitative design can be managed or controlled by the researcher. Creswell (2007) also illustrated that the data collection and analysis proceed simultaneously. Qualitative research by a single investigator or several studies in a specific substantive area are often developmental. Sofaer (1999) reflected that some qualitative research begins with an exploratory study, and then moves toward a more structured research design as the knowledge increases. As in the case of this exploratory study, the existing research literature itself pointed to areas where further research was needed.

Case Study

For purposes of this study, the researcher chose to use a multiple case study method of inquiry. Trochim (2008, p. 147) describes case study as an intensive study of a specific individual or specific context. Case studies are not to be confused with ethnography or
participant observation. The history of case studies dates back to the work of the Chicago school of sociology, and social work case studies, and the case study is one of many methods in which a social scientist can conduct research. Case studies often provide an explanation or descriptions of phenomena, and the researcher must use care in designing and carrying out their research to overcome unavoidable criticisms that the case study method carries with it. Case study, as defined by Bogdan & Biklen (2007) is a detailed examination of a setting, or a single subject, or a single depository of documents, and explains that the case study can vary in complexity. The case study begins with a wide and open lens, and then the lens narrows as the focus of the research is narrowed. The researcher for this study, throughout the study, observed teachers using reading strategies through a relatively narrow focused lens, and learned to ignore many events that did not pertain to the focus of this exploration. The researcher’s perspective was a core component of these case studies.

There is concern that the case study does not provide basis for scientific generalization. The same concern might hold true for a single science experiment. Scientific facts are rarely based on one experiment, but usually stem from multiple experiments that have replicated the same phenomenon under unlike situations (Bostick, 2009, p. 82). This multiple case study explored elementary teachers use of instructional reading strategies related to science instruction. When researchers study two or more subjects, settings, or depositories of data, Bogdan & Biklen (2007 p. 69) refer to the studies as multicase studies. This exploratory study was a multiple case study that gathered information about six elementary teachers on a single school site.

The qualitative research process requires the researcher to focus on the perceptions of the participants in the current investigation rather that the experiences that the researcher brings to the study, or prior written research. Qualitative researchers tend to analyze their data inductively,
so they do not search out data or evidence to prove or disprove hypotheses they hold before entering the study, and Bogdan & Biklen (2007) contend that the abstractions build upon each other as the particulars that have been gathered are grouped together. In this case, the researcher focused on six elementary science teachers, reading strategies used in their science instruction, and how those reading strategies related to expository science topics and text.

The emergent design of qualitative research mandates that the researcher be willing to modify the initial plans if necessary. As the research evolved, questions, participants, and data collection decisions were made. For example, data collection about how the teachers used science instruction depended on such factors as the time of day that their science classes were scheduled. Also noteworthy is the rather short duration of this study. The state department sets the standardized testing schedule in the spring of each school year for grades 3, 4, and 5. The standardized testing schedule was unavoidable, but was a factor that constrained the length of the study. However, state testing schedules were beyond the scope of this study or the control of the researcher.

Moreover, the researcher faced the teachers’ anticipation of the high stakes testing that was scheduled during the spring semester. Consequently, drill and practice using standardized student practice booklets dominated the science instruction during most of the observations. Although the practice booklets contained samples of various types and structures of expository text, there was minimal and limited observation of teachers using of expository text from a science book or informational trade books.

The research setting included teacher’s classrooms that housed a population of students from low socio-economic backgrounds and significantly high levels of poverty. Therefore, those
cultural and demographic factors concerning poverty and the students’ limited prior knowledge of the science expository text topics were factors that influenced this study.

The researcher was aware that as insightful qualitative data emerged during the duration of the study, adjustment of the initial plan for the study might be necessary.

Participant Observation

All human beings act as ordinary participants in many social situations. Once we learn the cultural rules, we become tacit and we hardly think about what we are doing. The researcher in this study used passive participant observation as one of the methods of gathering data. Spradley (1980, p. 59) emphasizes that a researcher can infer a great deal a situation by engaging in passive participation at the scene of action, but does not participate or interact during the observations.

Spradley (1980, p. 54) states that the unseen differences between an ordinary participant and a participant observer are that the participant observer has observations that are mostly inside his head. Bogdan & Biklen (2007 p. 2) elaborate that participant observation and in-depth interviewing allow the researcher to enter the world of the people he or she plans to study, gets to know them and earn their trust, and systematically keeps a detailed written record of what is seen and heard. The data can be supplemented by a collection of other data such as school memos, lesson plans, or other records, as needed to collect data for the qualitative research. In this case, the principal and the teachers provided additional data, as needed, such as lesson plans, examples of student standardized test practice booklets that related to science expository text, demographic data, or other information requested by the researcher.

There are six major differences between an ordinary participant and a participant observer that the researcher used during this study. A participant observer would seem, by
outwardly appearances, like an ordinary participant in the research. However, Spradley (1980) describes six major differences between an ordinary participant and a participant observer. The first major difference is that the participant observer comes to the situation with two purposes. The first purpose is to engage in activities that are appropriate to the situation. Secondly, the participant observer comes to observe the activities, people, and the physical aspects of the situation. Therefore, the researcher comes to a research setting with a dual purpose.

Explicit awareness is identified as the second major difference between ordinary participation and participant observation. The participant observer seeks to become explicitly aware of the focus of the research in a particular research setting. A wide-angle lens of an observational focus leads to some of the most important data, and is identified as the third major difference (Spradley, 1980) between a participant and a participant observer in qualitative research.

A participant observer simultaneously experiences both being an insider and an outsider of the research experience and is identified by Spradley (1980) as a fourth major difference between a regular participant and a participant observer.

Introspection is the fifth major difference between acting as a participant or a participant observer. Since the researcher is the instrument for qualitative research, the researcher’s introspectiveness increases.

Finally, the sixth difference that Spradley (1980) identifies as a major difference between regular participation and participation observation is record keeping. The participant observer keeps a detailed record of objective observations as well as subjective feelings. In this study, the researcher kept records of the classroom observations in addition to the forms that are included in the appendices of this study.
Participant observation provided opportunities for this qualitative research study by allowing the researcher to experience the feeling of both being inside and outside the classroom setting.

The researcher conducted observations for this exploration and observed the ongoing activities that occurred in the classroom environment during science instruction and selected activities that were pertinent to this study.

Various record keeping was essential to the exploration, so the researcher collected a detailed record of ongoing events from the six teachers who participated in this research. “Both objective observations and personal feelings” (Spradley, 1980) were recorded for the observations conducted for this study. Furthermore, the use of both structured and informal interviews and field notes from were used in the data collection for this study.

Written field notes were the primary means in which observations were recorded for later analysis. The researcher used a simple system of keeping a field notebook for the course of the study. Spradley (1980, p. 71) suggests that qualitative researchers utilize field notes to remind them of events that might “Like a diary…this journal…contain[s] a records of experiences, fears, mistakes, confusions, breakthroughs, and problems that arise during field work,” according to Spradley, might otherwise be forgotten.

Observations using field notes as well as simultaneously recording information on Appendix E, a form designed by the researcher for recording classroom observation information, and Appendix F, a rating scale for teacher observations adapted from Ortlieb (2007), provided a repeatable simultaneous technique for gathering information from the classroom observations.

The researcher observed each of the six teachers in order to gain a sense of the teacher’s instructional style, demeanor, the classroom setting, and to sense whether the teacher proved
suitable for the study. After the initial observation, the researcher conducted subsequent observations to see how science lessons built upon and correlated to one another. Classroom observations occurred on different days of the week. Since the researcher explored for both similarities as well as differences among grade levels, written observations were constructed from the observations and field notes for each of the six teachers.

Interview

An interview with the campus principal took place at the beginning of the exploration. Other informal interviews, such as encounters with the principal in the hallway or outside on the sidewalk were ongoing throughout the study. The formal teacher interviews also took place at the onset of the study, and were scheduled in the teachers’ classrooms when students were not present in the room. Other informal interviews with the teachers took place as questions arose during the classroom observations. The collection of data for this study was flexible and ongoing.

A reading specialist, who served as the math and science coordinator on the research campus site, served as a key informant for this exploration. The key informant was interviewed at the beginning of the study. During the study, the researcher frequently informally conversed with the key informant and the six teachers in the hallways, on the playground, or on the sidewalk, and sometimes in informal meetings about information that pertained to the study. The key informant served as a resource for information about the culture of the research site.

Developmental Reading Sequence (DRS)

The research cycle requires that an investigator ask questions, collect data, and analyze the data before repeating the process of asking more questions (Spradley, 1980, p. 86). In an effort to better understand elementary teachers and the strategies they used with expository text
in science classes, this study explored what teachers did when they taught science using expository topics.

A major component of the task analysis involved searching for patterns among field notes that were collected. Reading strategies that related to expository text could only be derived when relationships were noticed between the place (setting), actors (teachers), and activities (reading strategies). The researcher was also aware of three factors that were identified by both Weaver (2002) and Sweet & Snow (2003) as factors that affect comprehension: the reader, the text, and the activity, all existing within a sociocultural context. Those patterns and interconnected relationships were embedded within the researcher’s field notes, thus requiring a careful examination of the notes to note themes and patterns that emerged among the notes. The overall process of domain analysis was recurrent and repeated throughout the study.

Cultural themes function as general relationships among the cultural domains, and seek similarities and contrasts among the domains. For example, during this study, there were similarities and contrasts among the teacher’s use of whole and small group instruction. Spradley (1980) also emphasizes that the researcher must examine field notes for contrasts among the dimensions in order to provide general concepts about the subsystems of cultural meaning (Spradley, p. 148). Cultural themes emerged throughout the study.

Focused observations were established though analyzing patterns in the field notes. Spradley (1980) maintains that a balanced tension between a holistic perspective while limiting its scope is the essence of the Developmental Reading Sequence (DRS) Method. The DRS Method employs twelve steps to a systematic approach to fieldwork research in a social setting. In this case, the observations took place in second, third, fourth and fifth grade science classrooms while the teacher was delivering science instruction.
Spradley’s twelve steps provided sequenced tasks to assist the researcher to discover cultural patterns that included the techniques of interviewing and participant observation (Spradley, 1980, p. 175). The focus of the classroom observations in this study was to discern how the teachers used reading strategies with science expository text in grades two through five.

The Developmental Reading Sequence (DRS) steps begin with a wide focus and the research includes the entire social situation from Steps 3 through 12 in the developmental sequence. Spradley (1980) illustrates that the DRS steps have a dual focus: one is narrow and the other is broad and holistic. Toward the end of the inquiry, the focus expands again to make a holistic description of the cultural scene. Instead of beginning with perceived ideas about what to find, the researcher sets out to describe what is observed. In qualitative research, the data emerges as the research progresses, and is flexible and ongoing.

There are five principles underlying the DRS method that provide a workable approach to this study. Spradley (1980, p. 101) asserts that “studying a single domain intensively, rather than many domains superficially” is the premise behind choosing an in-depth investigation versus a surface investigation of several domains.

The first principle that Spradley provides is a workable approach to qualitative research by providing a sequence of appropriate research activities, also described as the single-technique principle in order to provide sources of data for participant observation.

Figure 4 on the following page is from Spradley (1980, p.103), and the diagram outlines the Developmental Reading Sequence.
The D.I.S. steps begin with a wide focus, surveying many possible social situations. When one is selected, the research includes the entire social situation from Steps 3 through 12. However, there is a dual focus, one narrow, the other broad and holistic. The ethnographer continues to use the skills learned in Steps 4 and 5 while at the same time focusing observations on selected cultural domains. Toward the end of the project the focus expands again to make a holistic description of the cultural scene.

Figure 4: Developmental Reading Sequence
There are five principles underlying the DRS method that provide a workable approach to this study. The first principle that Spradley provides is a workable approach to qualitative research by providing a sequence of appropriate research activities, also described as the single-technique principle in order to provide sources of data for participant observation. Secondly, the DRS Method identifies a set of twelve tasks for the researcher to carry out so that the researcher learns the basic skills of participant observation and writing a cultural description.

The third principle in the DRS Method is based on a developmental sequence of specific tasks necessary to complete each of the twelve major steps so that the researcher conducts research in an efficient, workable, and systematic way.

Research using the DRS Method engages the researcher in original research in both participant observation as well as ethnographic interviews in the same cultural setting. In this case, the researcher focused on how six teachers across several grade levels used strategies related to expository text structures or topics.

Finally, the fifth principle of the Developmental Reading Sequence Method is based on the problem-solving process, and each of the twelve steps involves applying the process to participant observation and ethnographic writing. Since fieldwork study is unique and presents new problems, the researcher needs to apply problem solving throughout the study.

For the purpose of this study, the focused observations revolved around questions that were repeatable and needed to be asked several times and formed relationships between domains of the exploration.

Investigators often use interviewing to answer questions during step four by using descriptive questions, and enter the research setting with general questions about what is going on in the setting. In step six of the DRS Method, the inquirer used structural questions
(repeatable questions) on order for the researcher to make more focused observations in the research setting. Step eight of the DRS Method employs contrasting questions to identify differences through selected observations in the research setting. During the study, data was collected and synthesized from information from interviews and the participant observations. The structured interviews were conducted in a specific time and place. Permission and consent was obtained from the interview participants preceding the study and the interviews were tape recorded to ensure proper data collection during the interviews.

Analysis of Documents

In order to determine the findings from a qualitative study, the researcher must systematically search through and arrange the data that was collected during the study. The data collection can include field notes, interviews with the subjects, forms or questionnaires, or any other materials that were used in the data collection. This process involves not only arranging the materials in a usable, logical format, but eventually requires the researcher to synthesize them and search for relevant patterns (Bogdan & Biklen, 2003).

Four primary sources of document analysis were used for this study. One source was the field notes that were collected from the various classroom observations of science instruction. The field notes primarily concentrated on the teachers’ use of reading strategies during science instruction. The researcher examined the field notes in order to discover both similarities and differences in the observations of six teachers who participated in the study.

A second source of data included interviews with the participants of the study. The interviews included questions that were adapted from Ortlieb (2007), and copies of the interview forms for the principal, the key informant, and the teachers are included in the Appendix section of this study.
Taped interviews with each of the participants provided additional information for this study. The recorded interviews also provided information for personal reflection from each of the participants in addition the other information provided with other informal interviews that were conducted continually throughout the study.

Finally, other data was collected using observation forms and a teacher rating scale observation form adapted from Ortlieb (2007) which provided additional information about the classroom observations. The forms that were used are Appendix E, a teacher observation form designed by the researcher, and Appendix F, a classroom observation scale adapted from Ortlieb (2007). The observation forms and teacher rating scale were used simultaneously with field notes to gain insight into the teachers’ use of reading strategies that related to expository science text.

After the field notes were taken, it was important for the researcher to separate the information that was relevant to this study by dividing it into categories. The separation of the information allowed the researcher to focus on significant facts. The researcher searched for and described patterns and topics that emerged during the study. As data is placed into appropriate categories, the researcher applies critical thinking by speculating about how these patterns applied to what becomes known about the subjects and the study in order to develop strategies for interpretation of the information that has been collected (Bogdan & Biklen, 2003). This can be accomplished through the application of the processes suggested by Bogdan & Biklen (2003) in *Qualitative Research for Education*.

There were four emerging themes that evolved as implicit findings during the study and they are discussed in the findings of the study.
Four emerging themes from this study evolved as implicit findings during the study. One of the most important themes that emerged from this study was that the six teachers emphasized that there are time barriers that exist during the day for science instruction.

A gem, or implication for further research, that emerged from the interviews from the teachers became apparent when one of the second grade teachers, Teacher B, stated, “One of the most difficult barriers to teaching science is that we do not have enough time to teach science.”

Teacher C, a third grade teacher who participated in the study, also described the most difficult barrier to teaching science related to expository text was “not enough time” and that the “instructional materials is not on the instructional level of the students.”

Findings

The descriptive and narrative nature of qualitative research combined with reliable organization of the data that emerges during the study from a variety of sources provides a meaningful way to explore and understand educational phenomenon (Bogdan & Biklen, 2003). The examination of issues that influence education is constantly changing, and as a researcher becomes an observer in social situations that allow him to see and record relationships, it provides opportunities for the researcher to examine implications for further research.

Bias

Teachers’ personal values as well as their attitudes toward reading instruction may have affected the reading strategy instruction the teachers used within their elementary classrooms. Demographic variables may have influenced the teachers’ choice of the reading strategies they used to teach science using expository text; however, controlling for these complex situations was beyond the scope of this study.
In qualitative research, themes emerge during the process rather than from the researcher’s expectations. In qualitative research, the researcher enters the study without expectations. Therefore, bias may ultimately exist, but is not the intent of the qualitative researcher.
CHAPTER IV: FINDINGS AND DISCUSSION

The findings for this study were collected and obtained through interviews with the participants in the study as well as from field notes from classroom observations of six teachers in second through fifth grade. The campus principal, the key informant, who is a reading specialist and served as a math coach on the campus, and the six teachers who participated in the study were interviewed individually. Observations of the six teacher participants were conducted in the classrooms’ natural settings during the science instructional time blocks, usually toward the end of the school day. Field notes as well as interview notes were reviewed and analyzed by the researcher in an attempt to share the researcher’s findings for each of the participants and their setting. The results and discussion of the findings of this study are on the following pages.

Interview with the Principal

The principal’s interview took place in the principal’s office at the elementary school where the study was conducted. During the interview, the Principal A shared some information about her background and education. The principal imparted that she was born and attended school in New York City before she relocated to the southern part of the United States. The first college that the Principal A attended was in New Jersey, but she had lived in other states before serving as principal of the elementary school where she is now the principal. Principal A has teaching certificates in two other states besides the state in which she presently works, and Principal A attended universities in Texas as well as Louisiana to finish graduate work in educational administration.

Principal A related that she had previous classroom teaching experience as a lower elementary level classroom teacher in both first and second grade, and also served as an instructional support teacher in grades ranging from early elementary through the upper
elementary grades. Principal A had eight years experience at the research site, and when questioned as to why she became a principal, she replied, “I wanted to affect a whole school of kids instead of just one class, and I was encouraged by my supervisors to become a principal.” The principal’s intent to make a difference in education was obvious to the researcher. Often during the study, the researcher observed Principal A’s involvement with the teachers and the students during the school day, and Principal A was highly visible on the campus at all times. Her open door policy was warm and friendly, and she handled concerns or questions with both efficiency as well as expediency.

The principal’s philosophy included involving both parents and the community on the school site in order to provide enriching experiences for the students that they would not ordinarily have because of their high poverty backgrounds. The socio-economic population of the school where the study was conducted was almost ninety six per cent impoverished, so the majority of the students ate both breakfast and lunch meals that were provided at school by the free and reduced lunch program. The principal included parents in the lives of their children by extending invitations to them to attend several parental functions throughout the school year, including Western night, Open House, literacy night, and math night. Principal A emphasized that her open door policy allowed parents to come in to the school office at any time to discuss problems, concerns, or compliments, and that her policy had contributed to her success as a principal at her school. The school and campus community had embraced a program that utilizes community support for volunteers as reading partners, or reading friends, for the students who need extra help in reading. When asked how she motivated parents, Principal A stated that she has motivated the parents through the children by frequently sending home notes, progress reports, and communicated with parents through daily phone calls about both positive and
negative happenings at school. Principal A communicated often with the teachers, students, and parents.

Building teamwork through collaborative relationships is how Principal A chose to motivate staff and teachers. Frequent meetings, including weekly grade level meetings with the classroom teachers were useful for creating positive staff relationships. The principal established positive behavior support by distributing certificates of “praise pie” for classrooms that exhibited successful behavior during the school day or week, and when the class collected all the pieces of praise to make a whole pie, the class was rewarded with a certificate. The certificates were displayed outside the teachers’ classroom doors and served as motivation for both teachers and the students. Collaboration and team building was an integral part of the teacher’s day since sharing groups met weekly with both the principal and the instructional math and reading coaches who were housed on the campus.

Principal A emphasized that time management is the most difficult aspect of being a principal. She noted that in addition to the daily instructional walk through observations (with individual colored note cards that she used to help her track daily classroom observations); she also used a technology-focused walkthrough using a hand held computer device. The walkthroughs were a vital part of the principal’s focus, and since Principal A had an assistant housed on the campus that handled student discipline, the principal spent minimal time during the school day with student discipline matters and a maximum of time collaborating with and observing teachers in the classrooms.

When questioned about the most important reading strategies that students need to possess as successful readers, Principal A accentuated her belief that students need the ability to decode words, restate ideas, and read and understand directions. Interestingly, of the six teachers
who were interviewed for this study, three of the six teachers emphasized decoding in reading as foremost in student success, along with the importance of students being able to restate main ideas in reading passages, and be able understand what they hear. Three of the six teachers in this study reiterated the philosophy of the principal regarding decoding during their individual interviews.

Through a discussion, exploring how the teachers conduct science instruction on the campus, the principal noted that time is the biggest barrier to science instruction. Interventions for reading and math are ongoing throughout the school day to pull students from their regular classroom instruction, to form small groups for math and reading interventions during the school day. Therefore, since the research site depended on federal funding programs for reading, and the federal program required specific times during the day for reading and math instruction, there was a minimal amount of available instructional time left to teach science. While math and reading used flexible grouping to meet differentiated needs, in second and third grade, science was primarily taught during the last thirty minutes of the school day using whole group instruction. An exception to the specific constraint during this study was the designated instructional time blocks for science in the upper intermediate fourth and fifth grade. Since fourth and fifth grade science instruction was not constrained by the same federal program funding mandates for reading as the kindergarten through third grade students, Principal A indicated that one fourth grade teacher taught all science classes for all the fourth grade classes, and the science classes were ability grouped for most of their instruction. However, the fifth grade teacher in this research study taught a heterogeneously grouped self-contained fifth grade class, so the fifth grade teacher in this study taught her own science classes, but sometimes
teamed with another fifth grade teacher in the classroom next door in order to maximize some of their science instruction.

Regarding assessment, Principal A conveyed that in addition to the curriculum unit science tests, further assessment of science instruction was demonstrated through students’ weekly science work samples that were turned into the principal by each classroom teacher. Student weekly work samples were additional assessments to the grade level local school district’s required science curriculum unit tests. Principal A highlighted the fact that there are no required textbooks used for science instruction, so the science curriculum was based on state and local curriculum standards.

The principal indicated that she evaluated learning by the students’ test scores, and emphasized that test scores are the criteria that she used to judge whether learning was taking place in the classroom. In contrast, the teachers’ interviews in this study indicated that the criteria for they used for judging student success was established by the students’ ability to orally share information during the conversations that took place during the science instruction. It was interesting for the researcher to distinguish the stark contrast between the principal’s and the teachers’ perceptions of how to evaluate effective science instruction.

In an informal interview later in the research study, Principal A noticed that there was a scarcity of lesson plans that were used for science of instruction. Principal A also emphasized that one of her future goals is to integrate the science instruction with the reading instructional time maximize the amount of time available for science instruction. When questioned about the components of the science lesson plan, the principal gave the researcher copies of three randomly selected lesson plans for some of the teachers who were participants in this study, but
both the researcher and the principal noted that the science plans were not for the science lessons for the study and the lesson plans were thorough.

During the interview, the principal commented that there is a need for the basal reader to be integrated and aligned with the science curriculum. Since state standardized testing provides the standards for the state and local grade level expectations, the demands to increase standardized test scores add anxiety for both the students and the teachers to achieve in science as well as math and reading. Principal A encouraged integration and alignment of the reading and science curriculum in order to eliminate some of the burden of the time constraints for content area science instruction throughout the school day.

Interview with Key Informant

The key informant who participated in this study was a reading specialist who was serving as an instructional math coach on the campus. She had not previously served as a reading specialist on the campus, nor did the principal involve the key informant in the reading program at the school where this study was conducted. The key informant had knowledge and a philosophy that embraced reading strategy instruction and she was able to provide insightful input about which six teachers in second through fifth grade might be willing to participate in this study.

The key informant was reared in southern Louisiana and moved to Virginia when she was a young adult. She lived and received educator certificates in both Virginia and Texas, then returned to the area where she was born and reared to work in the school where she was working as a math coach. The key informants’ teaching background included classroom teaching experience in third through sixth grade, as well as serving as an academic coach to assist learners who were struggling readers. Her position as a math coach happened because of the huge need
for math specialists to “help bridge the gaps” with the constraints that accompanied the No Child Left Behind accountability requirements.

When questioned about why she chose the educational field as a career, she replied, “I like working with children, and I want to make a difference to help kids.” The key informant described her concern that the most difficult aspect of her job is to keep the students interested and engaged.

The key informant was instrumental in gaining the support of the teachers for this study. It was evident that in the cultural climate of the school where the study was conducted, the key informant supported the teachers and assisted them if they needed ideas to help a struggling student. She often conferred informally with teachers in the school hallway and would assist in making suggestions for instructional strategies that might be helpful to them. Her knowledge about reading instruction was extensive and she was collaborative, supportive of the teachers’ needs, and willing to help the teachers meet the needs of all levels of learners.

One aspect of our frequent conversations during this study involved a bond that we formed because of our love for reading, and current research surrounding reading and instructional reading strategies. During one of our interviews, we discussed the barriers to science instruction at the school. The key informant articulated that the teachers are sometimes apprehensive about teaching science because there were no teacher guides available. The unavailability of science materials on students’ instructional reading levels made it difficult for teachers to teach expository text in science. In addition, the key informant highlighted that time was definitely a barrier to science instruction because so much time was devoted to math and reading interventions during the school day that there is minimal time left in the school day for science instruction. Small groups of students were pulled out of their regular classrooms in
order to receive additional instruction for the intervention groups before the end of the school day; consequently, many students missed the science instruction if they attended intervention groups at that time of the day.

During our interview, she emphasized that the students needed exposure to all types of texts, especially since the majority of the students came from low socio-economic backgrounds with a student population that had a high level of poverty. The key informant reflected that one strategy that had not been used on the campus is taping, or recording, the science text, to use the teacher’s voices to record the expository text chapters in the science book so that the students could make connections between the text to print and the print to their environment. The key informant discussed her concern about the difficulty of the science vocabulary words in the science lessons. The key informant elaborated that the students need to be able to analyze the pictures in the science text, examine the headings in the informational text, and be able to connect the text to the words and pictures that they examine in science text.

A concern of the key informant was that she noticed that the elementary teachers on the campus did not use textbooks in science or social studies. The key informant also voiced that she felt that since the majority of the morning of the school day was primarily focused on the basal reader and its components, the amount of time left for instruction in science and social studies is limited. The key informant also expressed a concern about the limited time for science and other content area subjects at the school site. The limited time during the school day coupled with a primary focus on the basal reader and its components, was not connected with the content area instruction throughout the remainder of the school day. The key informant explained that although the reading strategies instruction could be extended into the math, science, and social studies instruction, it simply was not connected at all. Her concern raised questions about
where the teachers acquire the expository text that the students used in their science classes, the instructional levels of the materials being used, and if the readability level of the text was determined using readability formulas to determine if the readability of the text matched the instructional level of the students. We also discussed whether the text being used in the science instruction was appropriate for the instructional level of the students.

Both the key informant as well as four out of six of the teachers in this research study mentioned the absence of science books for science instruction in second through fifth grade classrooms.

For this study, the key informant played a role as a communicator and supporter to facilitate the researcher’s ability to easily immerse in classroom observations and explore how the teachers used reading strategies related to expository science text. The key informant was instrumental in assisting the researcher in developing trust and respect in relationships with the teachers who participated in this study.

Prior to the study, the key informant assisted the researcher with the collection of signatures for the informed consent forms from the six teachers who participated in the study.

Interview with Teacher A

Teacher A was born in a small town in southern Louisiana. She attended elementary and high school in a small town in southern Louisiana and she received a Bachelor of Arts teaching degree in elementary education from a local university that was located near the research site. Although her experience included four years in her assignment as a second grade lead teacher, this teacher began her teaching career by substitute teaching in a third grade math and science assignment as well as a sixth grade math and science teacher before she was assigned as a second
grade classroom teacher at the research site. She held no other state certifications nor had experience in states other than Louisiana.

Teacher A chose teaching as a career because of her love of children. “I like to think that I am making a difference,” she stated during our interview. She communicated with parents daily through notes and phone calls, and emphasized that she felt that her calm, reassuring voice helped her students to feel successful every day.

When questioned about differentiating instruction for second graders, this teacher stated that because math and reading groups at her school were based on periodic data for her students, and focused interventions for individual student needs and used large group instruction for science instruction. During the interview, Teacher A shared that there are no science textbooks for second grade, and that the standardized testing and accountability pressures were not as high as they are for third and fourth grade elementary teachers, especially in the teaching of science.

Teacher A emphasized that science instruction was rotated with social studies instruction during the last thirty minutes of the second graders’ school day, so they do not receive science instruction on a daily or weekly basis. The science instruction was based on local and state curriculum standards and is concentrated on units of study that were identified in the local school science curriculum.

Teacher A utilized technology during her science lessons using a small computer that she used like a television during large group instruction. The computer was located in the back of the classroom in the second grade classroom, and was located near a small carpeted area large enough to seat the whole group of twenty two students on the floor. Teacher A frequently used the computer to provide opportunities for the second grade students to use large group discussion
about the science lessons after they viewed video clips through United Streaming on the computer during the last thirty minutes of the school day.

Teacher A felt that her students did not have adequate background experiences because of their low socio-economic background, so they had difficulty in connecting their own experience with many of the science lessons. She often used the Think Aloud strategy with her students, and she explained that the second grade students were encouraged to “think aloud in their heads” in order to make inferences as they read and connected with science ideas. Teacher A described that much of her science teaching was related to the local and state standardized science curriculum standards that exposed students to multiple choice test items and taking formal science tests, in addition to the student assessment science work samples that are turned in periodically to the principal’s office.

Teacher A reflected that she ranked the most important reading strategies for students to know as the ability to decode, predict, and reread. She also added that some second graders’ vocabulary knowledge is inadequate because of their lack of background knowledge about specific topics, especially in science, and that students need to be taught to “think about their thinking.” Teacher A expressed that students need to be able to connect science to their everyday life experiences. She tried to ensure that science topics related to the students’ experiences and interests, and Teacher A encouraged an alignment of the reading curriculum with the science curriculum in order to overlap and integrate the reading curriculum throughout the school day.

Teacher A emphasized that she displays various expository text materials in blue plastic book bins in the learning center areas in her second grade classroom. The book bins provided opportunities for the students to select reading materials after they completed their assigned
work. Teacher A reflected that since there are no science textbooks for second grade, there was limited availability of reading materials about science on the students’ instructional levels.

**Interview with Teacher B**

Teacher B, a second grade teacher, grew up in Saudi Arabia, and moved every two or three years as a child because her Dad was in the oil field business. She moved back and forth between Saudi Arabia and the United States, and lived in the southern area of the United States whenever she returned to the United States after living afar. She attended college in the southern United States in the state of Louisiana.

The second grade teacher graduated with a Bachelor of Science in psychology and sociology, and became as an elementary teacher through an alternative teacher certification program in Louisiana. Teacher B had two years experience as a second and third grade teacher, and had taught all subject areas in both second and third grade elementary classrooms. Teacher B stated that she had received no special training with using reading strategies with expository text materials. Teacher B reflected that participating in collaborative teacher grade level groups has assisted her in planning for science and social studies instruction.

For differentiating instruction for her second grade students, Teacher B emphasized that she based her instruction on her students’ abilities, and prepared different levels of assignments that took into consideration the students’ ability levels. The second grade teacher also attempted to address the multiple intelligence levels of her students, and included daily communication with parents in the day-to-day activities that occurred in her classroom. Teacher B believed that teachers must be compassionate, possess good rapport with their students, and exhibit respectfulness and patience toward the students. The second grade teacher expressed her belief
that if she exhibited respect and modeled respect for her students, her second grade students would experience consistent classroom management.

Teacher B evaluated her own teaching performance by planning for the second grade students’ instruction using pre-test data, collaborative planning with a peer teacher team, and the input from the principal’s observations of her teaching performance. The second teacher believed that she maintained best practices by utilizing the input in an ongoing cycle that allowed her to remain current with best practice instructional strategies.

Second grade teachers utilized science materials that they had collected in their classroom to enhance the science curriculum, but Teacher B indicated that availability of science materials in the school was very limited. Teacher B emphasized that she used science expository text that she either had in her classroom or checked out the science materials from the campus school library. She taught the science instruction during the last thirty minutes of the school day.

When questioned about whether the students in Teacher B’s classroom had choice in selecting expository text materials, the teacher responded that the students had no choice of text during the actual science instruction. She highlighted that there were books available in her classroom that were part of the schoolwide Accelerated Reader program, and she further explained that some of those books were expository text materials. In her classroom, the students read those books after they finished the instruction that was planned for them during the day. Teacher B elaborated that science instructional time was expanded through the reading series if the basal reading series included an expository text passage, but that there were separate instructional objectives stated in the local curriculum for science and they sometimes differ from the objectives that were used in the morning reading instructional block.
One of Teacher B’s favorite strategies to use with her second grade students to teach expository text was rereading. She stated that rereading allowed the students to hear the concepts repeatedly, and allowed for review of those concepts during the science instruction.

United streaming video clips from various internet sources and pertinent Power Point presentations are used to integrate technology into the second grade science curriculum in her classroom, and Teacher B emphasized that there are several science videos available to enhance science lessons and that she used those videos with her second grade students to provide additional background information about the various science topics. During the science block of instructional time, Teacher B incorporated effective strategies such as visual or real field trips, visual aids and graphic organizers called Thinking Maps, and often rotated instruction between small group and large group instruction.

Modeling of the strategies was introduced in small group instruction, and most of the time the strategies were introduced during the reading block during small group, and then extended into the science block if the strategy was repeated again that day. Teacher B used real life pictures that helped students to make connections with the science and acquire additional background information for the second grade science lessons.

Unlike the third and the fourth grade teachers who interviewed for this study, Teacher B stated that she did not feel pressure from the spring standardized testing since second graders did not take those tests. Similarly, Teacher B said that the Louisiana Comprehensive Curriculum standards were the main ingredient of the second grade science curriculum.

The researcher noticed that the classroom environment in Teacher B’s classroom was consistently very calm and relaxed. Teacher B believed that because she followed through with the discipline management plan in her class that was based on positive behavior support, that all
her students were familiar with her expectations and respected those expectations for their behavior in her classroom. This teacher also conveyed that there was respectfulness among group members of the class, and that she used real life situations to teach real life lessons, such as modeling ongoing patience and forgiveness for her second graders.

Formal and informal assessments were used in Teacher B’s class to monitor student progress in science as well as the other subjects. This teacher compared the pre-test information with the formal assessment instruments that she used in teaching each unit in order to monitor each student’s progress in each subject. When asked how Teacher B evaluated learning progress in her classroom, she responded that she used formal assessments to evaluate learning.

Like most of the other teachers that were interviewed in this study, Teacher B described the two most difficult barriers to teaching science are the lack of time and the unavailability of science textbooks in second grade.

Interview with Teacher C

Teacher C, a third grade teacher, was born in New Orleans, Louisiana, and has attended three different universities located in Louisiana. She had a background in sociology and a Bachelor’s Degree from a Louisiana university in elementary education. Teacher C had fourteen years of elementary classroom experience ranging between first to fourth grades.

When questioned about why she chose teaching as a profession, she explained that she wanted to enter the profession when her own children were young so that she could be at school while they were at school. Teacher C, during this research study, was one of the teachers that exuded a caring attitude toward her students, and made notable contributions to differentiating instruction by matching the readers to their instructional level examples of expository text when the researcher observed science instruction in her classroom.
When Teacher C described strategies that she used with expository text, she discussed that students must be taught to find the important words in the questions and learn how to underline answers to questions about expository test that prove their answers. This third grade teacher differentiated instruction for students’ varying abilities by using repeated reading instruction, peer and partner reading, and extended time for some lessons.

Teacher C articulated that she enjoyed using science activities that used concrete hands on materials for science lessons. Teacher C believes that the hands on materials enhanced the interest level of the third grade students during Teacher C’s science lessons. This teacher related that she felt pressured with the state’s rigorous curriculum standardized third grade i-LEAP test, so she used continuous reinforcement of those skills during her instruction. During the spring, the teacher used standardized test items and practice pages for science instruction so that the students would be exposed to expository and informational text through practice sessions that she referred to as “skill and drill.” Teacher C utilized United Streaming videos on a classroom computer in order to build background knowledge about science topics that the students would not otherwise experience, and she used concrete objects for teacher modeling such as globes, skeletons, and rocks to elaborate about the science topics that were in the content of the united streaming videos.

Decoding, comprehension, drawing conclusions, making inferences, and locating the main idea were top five strategies that Teacher C considered as the top five reading strategies for all students to use.

Teacher C articulated that the lack of time for science was a barrier for science instruction, but the teacher engaged students in small groups and emphasized small group instruction since Teacher C felt that there were inadequate materials available on the students’
instructional level. Teacher C used enthusiasm, prior knowledge, and collaboration with other teachers to plan for science lessons. For example, at the beginning of this study, Teacher C and her class participated in a geology lesson with a guest geologist from a local university who addressed the large group of third graders with some information about rocks and the rock cycle.

Noticeably, the third grade teacher who participated in this study utilized the local university as a resource for some of their science activities, and employed the service learning and field experience pre-service university students to assist and facilitate small group instruction during science instruction.

Teacher C used student participation in oral discussion as an assessment tool during the science instruction as well as elaboration of students’ discussion during the science activities. Students’ engagement in the discussions during science lessons was also an integral part of the assessment process that Teacher C used for third grade assessment in science, and Teacher C conveyed that she motivated her students by using class discussions with examples of expository text to connect the discussions with expository print.

Interview with Teacher D

Teacher D, a third grade teacher, grew up in a rural area in the central part of Louisiana, and earned a degree in elementary education at a university in southern Louisiana. Teacher D was working toward a Master’s Degree. Her assignment during this study was in a third grade classroom; however, Teacher D had prior classroom experience in both sixth grade and second grade.

Teacher D underscored flexibility as the most important quality of an exemplary teacher, and cited patience and compassion as important qualities that exemplary teachers need to possess in order to be successful teachers. Teacher D voiced that she chose teaching as a career because
she knew what it was to struggle with reading as a student, and she wanted to help her students to be able to learn about the world around them. She also mentioned that her past teachers influenced her decision to become a teacher.

When questioned about instructional approaches, Teacher D indicated that she often chose peer and partner instruction as strategies in her classroom because she expressed that it was her belief that students learn from other students. Teacher D mentioned that she utilized repeated instruction as a strategy because the repetition often worked well with her third grade students. Consequently, Teacher D often utilized short review and reinforcement lessons that repeated the topic of the science lesson. She emphasized that she frequently modeled the strategy that was taught on a previous day, such as a lesson that she referred to when she related examples of pictures of rocks to the three types of rocks (igneous, sedimentary, and metamorphic), or utilized short passages of science expository text about those three rock types. Teacher D emphasized that she reinforced the expository text passages with review and repetition, and often allowed opportunities for her students to respond to the expository text by using constructed response, or open ended questions for assessment purposes.

Although Teacher D indicated that she did not allow students to choose their science reading materials, Teacher D emphasized that she used hands on concrete objects during her science lessons whenever possible. Teacher D emphasized that she often had to plan for the science lessons and gather the objects that she needed for a particular science lesson.

Teacher D emphasized that she felt pressured by the rigid expectations of the state standardized testing for third grade students and expressed her concern for the lack of time during the school day for science instruction. Teacher D underscored that time was definitely a barrier that kept her from teaching science for longer periods of time in the afternoon. She stated
that the focus on reading instruction and math instruction took most of the time blocks of instructional time during the day, so there is a minimum amount of time left for science instruction. Teacher D taught science during the last thirty minutes of the school day.

Teacher D elaborated that she did not use science textbooks for the third grade because she believed that the expository text in the books was too difficult. Even though third graders need more exposure to expository science text, Teacher D communicated that the different levels of ability amongst third graders is another barrier she faces when attempting to utilize expository science text in the instruction with third grade students.

Although Teacher D reflected that she believed that decoding words, drawing conclusions, making inferences, identifying the main idea, and summarizing were important strategies for third graders to use, she confirmed that she did not have adequate time to teach the strategies during science instruction. Teacher D underscored her belief that third graders have a wide range of levels of ability, and she felt that third graders often focus on reading the words rather than understanding what they read.

Teacher D mentioned that she used student observation as an assessment tool for the third grade students. In addition to weekly tests and student work samples that are turned into the principal each week, she feels that frequent use of oral discussion and repeated reading are valuable assessment tools to use with her third grade students.

Interview with Teacher E

Teacher E, a fourth grade teacher, grew up and taught elementary school in the same geographic area where she lived as a child. She stated that she grew up in a southern middle-class family in a southern town that housed a university where she attended college. She earned a
teaching certificate in Louisiana, and has two years experience in a teaching assignment that focused on fourth grade science and fourth grade reading.

Since Teacher E grew up in a family of educators, education was an important part of her family life as a child. Even as a young girl, Teacher E aspired to become a teacher.

Teacher E mentioned that she occasionally utilized the science textbooks that are available for science instruction in the fourth grade classes. Teacher E also felt pressured by the high stakes testing in fourth grade, so she used the majority of the science instructional time to have students do drill and practice with standardized test practice booklets that she used for review. She indicated that the expository text material in the fourth grade science textbook was too difficult for most of the fourth grade students to read, so she supplemented the science textbook with other expository text materials that were in the state standardized test format in order to help students become familiar with expository test questions. Since Teacher E was the only science teacher for the fourth grade students on this campus, she had the sole responsibility of planning science instruction for all the fourth graders on the campus. She emphasized that the pressure for the state standardized test for fourth grade was a huge responsibility that was overwhelming, so sometimes she felt as “though she were on an island by herself.” Teacher E had the sole responsibility of planning for science instruction for all the fourth grade students, and emphasized that the other teachers in the fourth grade did not share in inter-departmental collaborative curriculum planning for the different fourth grade subject areas, even though they participated in weekly collaborative grade level planning groups for reading and math. Teacher E’s emphasized that the fourth grade classes were grouped according to the students’ abilities in science, and the class groups ranked from highest to lower level ability. The selection of the groups for the ability grouping was done by campus administrators.
The fourth grade teacher utilized instructional strategies that accommodated both visual and auditory learners, through facilitating class discussions for the auditory learners, and she used Power Point presentations and other visuals for the visual learners. Technology was integrated into the fourth grade classroom with Power Points about science topics, computer vocabulary games in the classroom, and United Streaming videos that were useful for specific science concepts since the videos help build background information knowledge for the fourth grade science students. Since the fourth grade classes were ability grouped, Teacher E adapted the science lessons for the various levels of the science expository materials that the learners used in the classes by reading the passages to the students. Since the fourth grade classes were ability grouped, Teacher E emphasized that the lower level learners had science classes in the afternoon whereas, the higher ability fourth graders had science instruction during the morning before lunch.

The fourth grade teacher was responsible for all the science as well as the social studies instruction, so she rotated the instruction between science and social studies curriculum units that are defined by the local and state curriculum.

Daily phone calls increased parent communication for both positive and negative events during the school day, as well as written weekly conduct reports and students’ graded work packets that were sent home for parents’ signatures. Teacher E sent home book bags daily with the fourth grade students and required them to read with an adult for thirty minutes a day. The parents or guardians were expected to sign and return a form that stated that their child had read for thirty minutes every afternoon.
The fourth grade teacher reflected that she had read a book about student discipline and classroom management when she was in college, and continued to use those discipline and classroom management tips in her own style of classroom management. Teacher E believed that communication is vital, and that every class has different needs.

Teacher E explained that exemplary teachers used explicit instruction and utilized small group data-driven instruction to meet individual student’s needs. She communicated that science weekly work samples are turned into the principal, and that the students’ work samples included some multiple choice test items, as well as some constructed response items that were used to monitor, assess, and evaluate student growth. The student samples, after being monitored by the principal, were placed in individual student portfolios and were made available to parents.

For assessment, Teacher E monitored student progress through a portfolio of student work samples as well as utilizing other student assessment data from unit pre-tests in science. She explained that even though the pre-test required more teacher preparation time for her, the extra effort paid off in terms of evaluating and monitoring student progress.

In contrast with most of the other teacher interviews, Teacher E said that she utilized the science textbook in fourth grade for expository text. However, she did share that the students thought that the science text was boring and difficult to read. The teacher supplemented the science textbook with student standardized fourth grade practice booklets. The practice booklets were used for science instruction prior to the state fourth grade standardized test that is administered to all fourth grade students in the spring of each school year. Therefore, the use of the science textbook or other science expository was limited prior to the standardized testing in the spring since the majority of the science instruction was drill and practice on expository text passages to practice for the standardized test. For the most part during the times of the
observations, the researcher and the Teacher E had communicated that the high stakes testing puts pressure and anxiety on the fourth grade teachers and students, and that much of the science instruction through the spring semester was drill and practice that used various types of expository text passages for science instruction.

Interview with Teacher F

Teacher F is a fifth grade teacher who taught all the subjects in a self-contained fifth grade classroom. When elaborating on her background and education, Teacher F conveyed that as a result of her father being in the military, she frequently traveled and relocated from place to place including Germany, the northern part of the United States, and then to the southern United States where she attended the university in the town where she taught fifth grade. Teacher F had earned a Bachelor of Arts degree, and planned to pursue the Master’s Degree. She obtained a teaching certificate prior to entering the fifth grade teaching assignment.

Like the other teachers in this study, this fifth grade teacher had received no special training using expository science text. Teacher F had two years of teaching experience, and she conveyed that fifth grade was the only grade that she had taught. She related that she chose teaching as a profession because she wanted to make a difference in students’ lives and encourage them to achieve a higher education.

Daily phone contact with parents was an integral part of this fifth grade teacher’s day and she maintained constant parent with parents through daily conduct reports as well as invitations for parents to participate and attend events at school. This teacher believed that students must possess self-respect for themselves as well as respect for others, and practiced that philosophy with her own classroom management.
When questioned about Teacher F differentiated instruction for the varying abilities of her students, Teacher F articulated that she differentiated instruction by planning for the various levels of the fifth grade students. She differentiated the reading instruction for her fifth graders by using the leveled readers in the basal reading series, and she noted that several of the leveled readers with the current basal reading series contained expository text. Teacher F reflected that she planned the mode of instruction according to the students’ learning styles. Teacher F emphasized that she often used art in her science lessons to reinforce prior science lessons. For example, upon entering her classroom before one of the researcher’s observations, the researcher noted that the teacher had used an art activity to reinforce science concepts about animal cells, and the students’ labeled drawings of the animal cells were evidence that the students had used informational science text to label and draw about what they learned about animal cells. The drawings were proudly displayed on the wall outside the classroom door.

Teacher F, like Teacher C and Teacher D, felt pressured by the state standardized test for fifth grade. She related that many of the fourth grade students are retained since they do not pass the fourth grade standardized test, so the classes in fifth grade are usually smaller in size, and sometimes contain students who are a year older if they have repeated the fourth grade. Teacher F articulated that she frequently used consumable student workbook science expository text practice materials that are purchased for each fifth grade student. The practice workbooks provide opportunities to fifth grade students to practice locating information in various expository text structures. Teacher F also mentioned that she used interest and content area integration with some other subjects to keep the fifth grade students motivated.

The fifth grade teacher integrated technology into her classroom with many of the same strategies as the five other teachers who were interviewed for this study. Teacher F used United
Streaming videos, Active Board interactive presentations that used Power Points prepared to elicit student discussion and participation, as well as science expository text articles that were on various internet sites. This teacher emphasized that she used technology to “bring science to life.” Teacher F was one of the two of the group of six teachers included in the study that had an Active Board, or interactive white board, located in her classroom. She conveyed that the Active Board provided opportunities to teach reading strategies, especially graphic organizers, for expository text. Although the usually used the Active Board for large group instruction, she frequently used cooperative learning strategies for small group instruction.

Teacher F emphasized that she modeled reading strategies for her students during reading instruction, and then repeated the same strategies in science instruction. She encouraged her students to read independently at home after school. In contrast to the fourth grade teacher included in this study, this fifth grade teacher felt little or no pressure by the state standardized science tests that are administered each year.

For assessment purposes, Teacher F communicated that she utilized teacher-made quizzes, informal assessments during instruction, and student made science projects to monitor and assess student learning. Teacher F articulated that she used both formal and informal methods of assessment to evaluate student progress. Since Teacher F believed that a written test did not always evaluate her students’ learning, so she used classroom discussions to assess student progress. Teacher F frequently assessed individual student learning through the oral discussions and conversations that took place during science instruction related to informational text.
Observations of Teacher A and Teacher B

Teacher A and Teacher B are second grade teachers, so they were responsible for implementation of the same local and state curriculum standards for teaching science in second grade. Since there were no science textbooks used at the research site for science instruction at the second grade level, both of the teachers employed similar strategies to teach science lessons in their respective classrooms. Both second grade teachers simultaneously taught a science unit about the life cycle of the frog during the time of the researcher’s observations, and both teachers simultaneously reviewed a second grade science unit of study about animals and what they eat. The science unit reinforced information about animals and the food chain, and elaborated about the three different types of animals and what they eat. The three animal types that the second grade science classes discussed were the carnivore, herbivore, and omnivore.

At the time of the first classroom observations, the second grade students were studying a science lesson about the food chain and about animals and what they eat. Both Teacher A and Teacher B taught the second grade science classes during the last thirty minutes of the school day. The second grade teachers used large group instruction for science, and both teachers had small groups of students leave the room to go to interventions during their science instruction. Since science instruction was during the last thirty minutes of the school day, the second grade students were tired at the end of the day.

During the first observation, and during subsequent observations, Teacher A used a computer housed in the back of the classroom to show a Magic School Bus video that showed pictures of animals and the food they ate in order to teach short segmented lessons to identify the carnivore, herbivore, and omnivore. The science video showed pictures of each of the three types of animals, as well as the different kinds of food that each animal ate. For example, the
carnivore ate meat, the herbivore ate plants, and the omnivore ate both plants and animals. One strategy that Teacher A used was repeated vocabulary. She asked the second grade students to repeat each vocabulary word after she said each word. She would say the word, like carnivore, and then the students would repeat the word. Teacher A would repeat the word again after the students said the word, and then use the science vocabulary word in a sentence. Whole class discussions of the vocabulary words and using repetition of the vocabulary words by the students were the focus of the instruction for the second graders. The students used the vocabulary words to make connections to the science lesson during the large group instruction. During the majority of the classroom observations of the second graders, the second grade students participated in large group oral discussion during the science lesson. They extended their discussions about the three types of animals (carnivore, herbivore, and omnivore), and reviewed examples of what food the three types of animals ate. There were no science textbooks for second grade, so most of the time there were no expository text passages or books used during the oral lessons.

Both Teacher A and Teacher B used flow chart graphic organizers in the form of a sequencing activity for the students to cut, paste, and match the vocabulary words to the pictures of a carnivore, herbivore, and omnivore. Teacher B used a strategy that utilized five students as participants to hold pictures of animals in the various stages of the food chain. Teacher B had small picture cards of a hawk, a mouse, a snake, some grass, and a flower. The five students held the pictures of the animals, and then discussed how the animals should be sequenced according to what they ate in the food chain cycle. Teacher B used whole class oral discussion with five students holding the pictures so that the other second grade students could put the food chain in the proper sequence. As the second grade students discussed the pictures, they discussed
how the pictures needed to be ordered, or sequenced, according to what foods each animal would eat. Oral peer and group discussion was used as a strategy to model sequencing by placing the pictures in the correct order according to what foods that each animal ate. The pictures were of five different animals in different phases of the food chain and included pictures of a worm, a bird, an insect, a fox, and a raccoon.

The life cycle of the frog was the topic of a second grade science lesson by both Teacher A and Teacher B. Teacher A used a graphic organizer as a teaching strategy by modeling the use of a flow chart that was reproduced on a student worksheet for the lesson. After Teacher A introduced the flow chart graphic organizer that was modeled during reading instruction, the teacher placed the comprehension strategy in the reading comprehension center earlier in the day. The second graders used a flow chart with pictures of five animals that the students were supposed to cut and paste onto a flow chart to depict the life cycle of the frog. During the science lesson at the end of the school day, the students completed the comprehension center flow chart activity as a whole group, then individually at their student desks, after they had discussed the pictures of the life cycle of a frog. The pictures on the flow chart matched the pictures and expository text in the second grade basal reader, so the students were able to make inferences and connections to the basal reader text and the pictures of the frog’s life cycle to complete the areas of the flow chart. The flow chart contained five pictures of the life cycle of a frog, and the students had to construct a sentence about each of the five stages of the frog’s life cycle next to the appropriate picture that matched the text.

Teacher B used a different reading strategy with her second grade group. Teacher B used large pictures of the frog and the life cycle of a frog, and read passages of expository text that were on the back of the card. The whole group instruction included class discussion of each of
the pictures, and the students identified the stages of the life cycle of the frog. While the students sat on the floor on a carpeted mat, the teacher held the cards and read the text from the back of the picture cards. The picture cards were large enough for the second graders to view while the teacher read the text from the back the large picture. The second graders listened attentively as Teacher B read orally, then the second grade students extended the discussion by asking questions or offering additional details or information about what the teacher had just read orally to them about the life cycle of a frog. As the students listened to the teacher read the expository text, the teacher encouraged the students to raise their hands and ask questions if they needed clarification about the expository text that the teacher read.

The observations of the second grade classes were in the afternoon during the last thirty minutes of the day. During the observations, there was no evidence of any expository text materials being used for the science lessons, except for the lesson that Teacher A used that correlated to the second grade basal reading story about the life cycle of a frog.

Observations of Teacher C and D

Both third grade teachers taught large group science lessons during the last thirty minutes of the day. The third grade teachers had the responsibility of the state standardized test for third grade in the spring, so both Teacher C and Teacher D were apprehensive about the upcoming high stakes testing in the spring. It is notable that neither Teacher C nor Teacher D used science textbooks or science trade books for any of the classroom observations, and that the state adopted science books were nowhere in sight of the researcher. Since the third grade teachers were preparing for the high stakes standardized testing during the spring semester, the third grade teachers used drill and practice test preparation booklets that emphasized various types of samples of expository text. Each of the third grade students had individual copies of the practice
test booklet, and the booklet was used as review during the science instruction at the end of the day. The students also had a separate practice booklet for social studies, and during the course of the study, the researcher often noticed that the students had the social studies booklets on their desks. The students had student copies of the science test preparation booklets which focused on expository test items in a standardized test format, and both third grade teachers who participated in the study used whole class discussion about particular passages of expository test that were located in the practice booklets.

Both Teacher C and Teacher D were required to administer the third grade state standardized test in third grade. Both teacher C and Teacher D had shared in their individual interviews that they did not feel that there was adequate instructional time to teach science during the school day, and that they rotated the science and social studies instruction in third grade. Consequently, the third grade students would have science instruction for three weeks, then rotate and have social studies instruction for three weeks. There were no textbooks focusing on expository text for either science or social studies.

One difference in the classroom observations of Teacher C indicated that Teacher C utilized the leveled readers, which are basal readers on different levels that accompany the basal reader series. Teacher C used some of the expository text leveled readers to teach science lessons to small groups, and integrated the basal reading skills and strategies into the small groups by using strategies that focused on science lesson areas. Teacher C also used a graphic organizer T chart to let her students diagram connections that were embedded in the text. For example, Teacher C used small group instruction with a group of five third graders to teach a science lesson about Alexander Fleming and his great discovery of the drug penicillin. Throughout the small group lesson, the teacher related and extended the expository text passage
to the students’ background knowledge about doctors, disease, and medical research. Oral
discussion and elaboration of the expository text that related to the students’ prior knowledge
about medicine, disease, and doctors was a strategy used by Teacher C, and she was able to use a
cause and effect chart to assess students’ comprehension of the leveled reader passages about the
man who discovered penicillin. Throughout the observation, the researcher noted that the
teacher would pause during the small group reading group instruction to explain, discuss, or
illustrate specific vocabulary words that the students did not fully understand. When the students
did not understand words or some of the meaning of some of the information in the passages,
Teacher C paused to clarify the students’ questions before they proceeded through the rest of the
passage. Therefore, the teacher had to pace the lesson using the strategy, and the expository text
passage may have taken longer than the teacher had anticipated since the students had some
difficulty in expressing the meaning of the some of the sentence by relating the information to
their own prior background knowledge. Teacher C assisted the small group of students to make
connections to the text, in real life as well as the sequence of events of the leveled reader.

The researcher used opportunities to be immersed as an observer in the science lessons,
and was able to observe Teacher C and Teacher D using short expository text passages as a
vehicle for student review. The short expository text passages were used to reinforce skills or
ideas that had been previously modeled or taught explicitly. For example, Teacher D taught a
lesson about the human ear and how humans to her third grade class using a one-page expository
text passage with a picture of the ear. The students read the passage aloud in a whole group
setting during the last thirty minutes of the day. The oral reading was followed by a large group
oral discussion about how humans hear. After the students read the passage together, the third
grade students became very quiet so they could complete the five questions at the end of the
expository text worksheet. Teacher D called individual students to come to the teacher and she assisted each student with measuring how many inches from their ear that they could actually hear sounds. The student and teacher used a twelve-inch ruler, the student’s hand to cup one ear, and a wristwatch that made a ticking sound to measure how far away they could hear the watch ticking. Not only did Teacher D use concrete objects for this science lesson, but she also contributed to classroom management since the third graders had to remain quiet so that the students could hear the wristwatch make the ticking sound. Each third grade student had an opportunity to come up to the teacher and see how many inches from their ear that they could still hear the sound of the ticking wristwatch.

As each student was called individually to the teacher to hear the wristwatch, using the ruler and a hand to cup their ear, the other students were busy at their seats writing their answers to the three comprehension questions about locating the main idea about the expository text passage that they had just read and discussed.

Other observations of Teacher D’s third grade included an actual whole group lesson in which a geologist visited the school and talked to the third graders about rocks. The geologist, from a local university, brought actual rock samples of metamorphic, igneous, and sedimentary rocks for the students to observe, and talked about each rock individually. The activity was a pre-reading activity to introduce the rock cycle to the all the third graders in the school. The visiting geologist established some prior knowledge about rocks and the three different types of rocks, so the third grade teachers were able to return to their classrooms with their students excited and interested about their upcoming science unit topic concerning the rock cycle.

One observation of Teacher D used a Power Point presentation about the rock cycle, and utilized oral class discussion with pictures of the rock cycle and various examples of pictures of
the three types of rocks. The third graders saw the visual representations of the pictures of the rocks, concrete examples of actual rocks, and heard repeated use of the vocabulary words about rocks throughout the lesson. The visiting geologist reinforced the students’ vocabulary as well as extending background knowledge to build their comprehension and understanding about the three types of rocks and examples of each of the three types of rock. The use of pictures and other visuals, actual rock samples, and use of specific vocabulary words added to the background knowledge of students, and enabled them to comprehend the meanings of science vocabulary words such as igneous, sedimentary, and metamorphic.

Both Teacher C and Teacher D took advantage of small snippets of time throughout the school day to teach various science terms and concepts using expository text. Though neither teacher employed the use of a science textbook, both teachers used various types of text, including the leveled readers that accompany the basal reader and other student worksheets to allow opportunities for exposure to different types of expository text, and to discuss the vocabulary and main ideas surrounding the text. Both teachers used reading strategies that utilized oral discussion and question generating where students constructed meaning from expository text as well as from students’ conversations in the classroom.

Observations of Teacher E

Teacher E was the only fourth grade teacher who taught the fourth grade science classes in this study. Since the other fourth grade teachers focus on one subject area for the fourth grade classes, Teacher E focused on science instruction for all of the fourth graders in the school. Teacher E voiced that she felt that she had less opportunity to plan science lessons with her colleagues since she was the sole science teacher in the fourth grade at the research site for this
study. Teacher E emphasized that she thought that she and her fourth grade students would benefit from more collaborative planning with a teacher team.

The students in the fourth grade on the research site were ability grouped for reading, math, and science instruction, so some of the science classes had higher ability levels than others, but all of the fourth grade science classes were ability grouped.

Drill and practice were part of the daily routine for Teacher E’s science instruction for fourth grade. Each day, she placed a daily agenda on her chalkboard for a daily routine. It was noteworthy that Teacher E used instructional strategies to take advantage of short periods of time for lessons that focused on specific objectives. Teacher E elaborated that the short lessons were planned so that the students remained engaged throughout the time that they were in science class. Teacher E varied the activities during the fourth grade lessons so that the students would remain engaged throughout the various parts of the lessons, and her classroom had interesting centers for the students to learn about science concepts.

Live crawfish specimens and various plastic bins of books containing science reading materials were scattered throughout the fourth grade classroom. The classroom was arranged so that the students sat in rows facing the large whiteboard that the teacher used like the traditional chalkboard. Also positioned at the front of the classroom was a large projection screen to show Power Point presentations, and there was a computer mounted on the wall to the left of the entrance doorway to the room. The computer screen was mounted on the wall was in full view of the students at the front of the classroom. Since the seating arrangement was for large group instruction, other learning centers like the live crayfish and the various informational books were scattered throughout the classroom so that the students could use the learning center materials when they had completed their assigned work.
Observations of Teacher E noted that the strategies that she used in her class depended on the level of the ability of the students in the class. In this school, since the fourth graders were ability grouped, the researcher observed fourth grade science lessons in the morning and in the afternoon during the school day. All fourth grade science instruction is focused on the rigorous state standardized test that is administered each spring, so the fourth grade teachers used every minute to keep the students engaged. The fourth graders reviewed and reinforced skills and concepts that the students needed to be successful with their standardized test.

Teacher E used short Power Point presentations to present various science concepts for review, and she emphasized vocabulary words that reinforced the concepts. For example, Teacher E reviewed the life cycle of a frog for the fourth grade class. After the Power Point presentation, which lasted about fifteen minutes, the Power Point pictures and the vocabulary words remained on the computer screen that was mounted on the wall like a television screen. The Power Point and the vocabulary words flashed on the screen similar to a television throughout the remainder of the lesson for the students to watch during the rest of the period while they were completing their independent work on special drill and practice worksheets that reinforced concepts that were used with expository text. The flashing screen with the vocabulary words and the expository text served as reinforcement for the lesson and was a strategy that assisted the visual learners in the class.

Teacher E had some science centers set up in her room that had a variety of reading material for the students to choose from when they finished their assigned seatwork. Although the fourth grade teacher did not let the students have choice in the instructional materials, the students did have some choice in selection of materials if they completed their assigned daily work. Since her students were ability grouped, some of the students had more time because they
completed their written work earlier than the other student, and had some time to select and use some of the materials that were located in the learning centers.

Fourth graders had individual student packets that included various expository text passages that were the focal points of fourth grade class discussions. The teacher elaborated those expository text passages as students participated in discussion during the explanation of the passages. In several of the work packets, students were expected to respond with written responses to open-ended constructed response questions that pertained to expository text.

Since the fourth grade students had similar daily routines, the researcher observed students completing seatwork in their assigned seats, as well as lively class science discussions. Since the fourth grade teacher also taught the social studies, Teacher E had to rotate instruction between the science and social studies curriculum, and time was a factor in planning for science instruction. In addition, the onset of the standardized testing in the spring was a determining factor in a minimal use of expository print materials since the students were completing the sample practice booklets for the fourth grade standardized testing.

Observations of Teacher F

Teacher F taught fifth grade, and the researcher noticed upon entering Teacher F’s classroom, the fifth graders were very excited and animated as they used oral discussion about the science lesson concerning the phases of the moon. The fifth grade students were encouraged to enter into the discussion about the science concept by raising their hand if they wanted to respond during the discussion. Upon entering the fifth grade science classroom, the researcher noticed that the classroom environment noticeably focused on science concepts. The fifth grade teachers at this school were self-contained, so they were responsible for teaching all the different subject areas, but Teacher F sometimes teamed her class with the fifth grade teacher next door.
for some of the fifth grade science instruction. This team-teaching strategy gave the teachers additional opportunities to extend science lessons and the advantage of having another teacher in the classroom. For one of the observations, Teacher F teamed with another fifth grade teacher, and they assisted each other with the fifth grade cooperative learning student groups for the science lesson about the circulatory system. Two teachers were in the classroom for the science lesson, and were able to assist the fifth cooperative learning groups with their conversations about the circulatory system. Teacher F assigned the cooperative groups for the lesson, and introduced the lesson about the circulatory system. The fifth grade science instruction followed the math block of instructional time after lunch, so Teacher F transitioned from math class to science class, and frequently engaged the fifth grade students with hand-on science lessons. For example, one of the science lessons that the researcher observed involved circulatory systems, and the inquiry based lesson utilized concrete objects including a balance, small clear plastic containers, water, and fresh celery with the leave on some of the stalks and some celery stalks without the leaves. The students were involved in taking notes in cooperative groups of four students. The students conversed about how a piece of celery is like the human body circulatory system. Noticeably, Teacher F focused science lessons on classroom discussions, and followed the discussions with independent work and practice materials using expository text passages. Teacher F used Power Point presentations to reinforce vocabulary words for the circulatory system, and used question generating as a strategy to extend student learning.

The fifth grade students did not use a science textbook. The students, did, however utilize expository text passages in a student practice booklet with a standardized test that reinforced the concepts in the state and local science curriculum. Although the practice booklets were not actually used in the science lessons, the practice books were visible on the students’
desks during the science lessons. Lively class discussions using science concepts such as the moon and early, rotation and revolution, and questioning surrounding the phases of the moon ensured student engagement and student participation during the researcher’s classroom observations.

Teacher F elicited responses from the fifth grade students, and allowed for student interaction with peers to explain and elaborate on vocabulary words and concept clarification. The fifth graders in Teacher F’s class sat in tables, or groups, that facilitated cooperative learning and oral discussions.

During the lesson involving the circulatory system, the students had several stalks of celery, small containers of water, a balance scale, and some small tubes that would hold water. The materials enabled the students in the cooperative learning groups to work together to formulate their hypothesis statements. During the observation, none of the fifth grade groups came up with the same hypothesis. In the observation of the fifth graders for the lesson about the circulatory system, all the students were engaged and seemed familiar as well as comfortable with cooperative learning group procedures.

Similarities and Differences of the Teachers

There are several notable similarities between and among the six teachers in this study. Background of the six teachers who participated varied in both experience and socio-economic backgrounds. Two of the six teachers were of African-American descent, and four of the teachers who participated in the study were Caucasian. All of the teachers who participated in this study were educated in the same state in which the study was conducted, and their experience ranged from two to fourteen years of classroom experience.
The classroom settings of each of the teachers were similar, and every teacher had a handwritten poster displayed in their classroom entitled Strategies that Good Readers Use. The strategy posters that were displayed in each classroom listed nine strategies that good readers use.

There were several references to reading strategies during the observations of the science classes, and the six teachers frequently referred to strategies that good readers use in their reading.

In each of the six teachers classrooms, there was a poster displayed that was in full view of the students. The researcher felt as though the poster was frequently referred to as a reference for students to use throughout their school day.

The strategies that are listed below in Figure 5 were listed on the poster that was displayed in all six of the teachers’ classrooms.

**Good readers:**
- Use decoding phonics
- Look at word parts
- Self-correct
- Read ahead
- Make/confirm predictions
- Sequence events/summarize
- Create visual images
- Use context clues to confirm meaning
- Make inferences

*Figure 5: Strategies Good Readers Use*
All six of the teachers in this study had the same poster prominently displayed on a wall in their classroom. Upon closer examination of the reading strategy poster, the researcher questioned three of the teachers about the particular poster and learned that the poster was from a previous basal reading series, not from the current basal reading series. The researcher also made note that the poster that was displayed did not reflect the focal strategies used in the current basal reading series, nor the strategies that are used on the current basal reading series observation checklist that is used by administrators or reading coaches that make walkthrough observations. Noteworthy is the fact that the reading specialist who is serving as the math coach on the campus had informed the researcher that the reading coach in the campus had not instructed the teachers to change the reading strategy posters to reflect the current reading series. Since the current basal reading series is in the second year of adoption, it came as a surprise to the researcher that the teachers did not have current focal strategies posted in the classrooms.

Although all six teachers had the poster within view of all the students in the classroom, and the most of the strategies listed on the poster were research-based strategies, the teachers had not updated the displayed poster to focus on the reading strategies that were used in the current basal reading series.

The researcher questioned all the participant teachers about their use of expository text materials for science instruction. None of the six teachers noted that they used a science textbook. The six teachers in the study voiced their opinion that they felt that the expository text passages in the science textbooks were too difficult for their students to read. The information that the science textbooks were not being used was also verified by the Principal as well as the Key Informant. The science textbooks were located in the teacher’s closets, and were displayed in the classroom for the students to use. However, the science textbooks were not used during
any of the observations for this study, nor were they ever referred to by any of six teachers in this study. When further questioned by the researcher about why the science textbooks were not used for any of the grade levels, the teachers who participated in this study all answered with the same answer that the science textbooks were too difficult for the students to use. Therefore, the students’ exposure to the science text that is correlated to the science curriculum for the state and local guidelines was extremely limited. Although there were extensive conversations and discussions about science concepts and topics, there were minimal connections made to expository printed text.

There were, however, student practice booklets for science, social studies, and math that were used by the teachers for examples of expository text. Often during the study, the teachers utilized the student practice booklets to reinforce the reading strategies that were being used with the particular passages of the text. This was particularly true in the third, fourth, and fifth grade classrooms in which this research study was conducted. Since it was not the researcher’s focus, the type of expository that the teacher chose to use was not an issue. However, the teachers indicated in their interviews that they did not allow student choice of expository materials in the classrooms.

Power Point presentations using vocabulary words as well as expository topics and passages were common on all grade levels with all of the six teachers. One difference in the use of materials was with the second grade teachers. The second grade teachers used several versions of the Magic School Bus Series. The Magic School Bus series is a series of videos that use science expository topics and other nonfiction topics for the focus of the videos. Since time was a barrier for science instruction during this exploration, the researcher noticed that both of the second grade teachers incorporated the use of the Magic School Bus videos into their science
instruction that was at the end of the day. The students were engaged during the Magic School bus videos, and the videos lasted about fifteen minutes. For the remainder of the observations that used Magic School bus videos for classroom discussions, usually whole group, and the students did remain focused and engaged throughout the lesson. The Magic School Bus videos have been cited as some reading researchers as suitable for expository topic discussions. However, the researcher did not note any expository textbooks in the classrooms that correlated with the actual video. There are, however, some Magic School Bus books available for teachers to use in their classroom, and the researcher notices that there were a few student copies of the Magic School Bus books available outside the classrooms on tables for the school Reading Friends to use with second grade students.

All six of the teachers in the study participated in the Positive Behavior Support (PBS) that is mandated by the state and was supported by all staff as well as the school administrators on this research site. Evidence of classroom management was certificates of praise for behavior that were displayed outside the teachers’ classroom doors. All of the six teachers who participated in this study had classroom a management plan in place, and the discipline management plans were evidenced not only by the student behavior in the classroom, but by the engagement of the students during the science classes that were observed by the researcher. Students were engaged during the discussions that were observed, and the discourse about the science topics was relevant to the science topics identified in the local and state curriculum standards for the different grade levels. In this case, the second grade through the fifth grade teachers all used questioning strategies throughout the science discussions, referred to several graphic organizers during the discussions, and frequently engaged student participants in the modeling of the strategies.
Most of the observations were large group discussions. One of the Third Grade teachers used small group instruction, but the majority of the classroom observations used large group instruction with oral discussions.

The classroom discussions had high levels of student engagement, and all six teachers extended the discussions of the students in all grade levels from second through the fifth grade. Field notes from the observations noted that there was seventy five to one hundred per cent student engagement throughout the science topic discussions.

Although there was a high level of student engagement during the classroom science discussions, the students were limited to the availability of science text for the discussions. The second grade and fourth grade teachers had blue plastic book bins with selections of expository text materials for the students to choose reading selections from, but the blue plastic book bins were not labeled with science topics nor were they set up for student engagement in science center activities during the science instruction that was observed by the researcher.

The third grade and the fifth grade teachers voiced their apprehension of the high stakes standardized tests named iLEAP, and both teachers used student practice booklets for the standardized test for the “kill and drill” for science. The second grade teachers that participated in the study reflected that they did not feel apprehension or anxiety related to the high stakes testing like the third, fourth, and fifth grade teachers who were involved in the high stakes testing.

The researcher was given a copy of the practice booklets at the beginning of the research study, so the researcher knew that some of the expository text materials would be available in the student practice packets.
All of the six teachers in this study used questioning strategies in their instruction. Most of the teachers, especially the third grade and the fifth grade teachers in this study, extended and elaborated on the students answers during class discussions.

For example, one of the fifth grade teachers during her discussion about the moon and the phases of the moon, elaborated about the students’ answers throughout the period of the classroom observation. Although expository text passages from the fifth grade science practice booklet for the high stakes standardized iLEAP test was sitting on the students’ desks, the expository text was never used during the observation. However, the fifth grade teacher engaged one hundred per cent of the students in discussion throughout the observation, and the students clarified misconceptions and extended their knowledge of the moon and its phases throughout the observation.

Similarities and Differences in Instructional Strategies

In examining and analyzing field notes, the researcher noticed that the teachers used some similar instructional strategies across the grade levels.

Throughout the duration of the study, there was a limited variety of text available to the students in the classrooms. Although there was a limited amount of a variety of expository text materials, all six of the teachers encouraged active student participation and student engagement in oral discussions. The classroom discussions in the second, third, fourth, and fifth grade centered on science topics during the science instructional time. All six of the teachers in this study used conversation and discussion. However, when analyzing the classroom observations across the grade levels, the researcher noted that there was a minimal use of expository test materials during science instruction. Elaboration of student discussion and clarifying concepts through oral discussion was evident throughout the study; however, there was a limited amount
of expository text print that connected the conversations with printed text or printed vocabulary words. Oral discussion extended the students’ background knowledge about science topics.

Upon examination of the six teachers’ lesson plans that were made available to the researcher by the principal, the researcher noted that there was a scarcity of teacher lesson plans on file for science instruction. There was, however, an abundance of social studies lesson plans. The researcher cannot account for the difference in the apparent lack of formal instructional planning for science instruction.

For example, the second grade teachers extended conversations about the Magic School bus videos, and the students were engaged in active participation and had several opportunities to participate in the oral discussions that followed the Magic School Bus videos. Since instruction was during the last thirty minutes of the day, it was difficult for the observer to discern whether the strategies that the teachers were using were explicitly taught during the morning reading block. Since the research site is constrained by federal mandates for reading funding, the morning reading instructional block is structured and has very specific curriculum guidelines.

In one observation, which occurred in mid-day, the researcher observed one of the third grade teachers, Teacher C focus a science lesson using expository text with a leveled basal reader supplemental book. The book was a nonfiction selection using expository text, and the students were able to locate information that they read about. In addition, Teacher C was able to elaborate and extend oral discussion throughout the lesson that allowed student engagement and participation, as well as allow student explanation about vocabulary words or other pieces of information that needed to be clarified using examples of expository text.

The researcher was able to observe third grade, fourth grade, and fifth grade students reading from and writing in individual student booklets for standardized testing. The student
practice booklets contained various types of sample questions that used expository text structures. The student practice booklets were usually on the students’ desks during the science observations, and referred to often throughout the observations for this study.

For the most part, the researcher observed third, fourth and fifth grade students reviewing and preparing for upcoming high stakes spring testing. The researcher noted that the teachers as well as the students were anxious about the anticipation of the testing. It was apparent to the researcher that the science textbooks or other materials had been put away on shelves until after the standardized testing was completed.

Oral reading and discussion strategies were evidence through the research study. Teachers in this study combined student conversations and extended class discussions to elaborate about science topics. The majority of the third, fourth, and fifth grade teachers used large group discussions that helped the students connect with prior experiences and build extended background knowledge about the topics.

Assessment

In analyzing the interview information from the teachers concerning assessment, four out of six of the teachers cited that they did not feel that written tests are always accurate measures of their students’ progress.

However, throughout the study, there is a recurrent concern with the minimal use of informal assessment or evaluation during the closure of the science lessons. This recurrence in the classroom observations of the six teachers left the researcher feeling that there were multiple opportunities at the end of the science instruction to close the science instruction with some informal assessment procedure, such as signaling for understanding, or having students state one thing they learned during the lesson. There were opportunities for summarizing, restating what
was learned, or other informal assessments, but there was little evidence of informal assessment in the classroom observations or field notes. Assessment strategies were not emphasized by the teachers during science instruction and the key informant articulated the absence of lesson evaluation or closure for science instruction.

On the other hand, four out of the six teachers were apprehensive about the state standardized high stakes test, and they were responsible for preparing their students for those tests. Third, fourth, and fifth grade teachers are responsible for state standardized tests that are given each spring. Consequently, during the time that this study was being done, there were high levels of apprehension about the testing and the dates of the testing, which fell right before and right after the school spring break holidays for the schools.

When questioned about assessment, most of the teachers indicated that they used informal assessment at frequent intervals to check for student understanding, and did not feel that the high stakes were indications of student progress. The teachers at this school site used DIBELS testing for reading, and progress monitored using the DIBELS test, which is predominantly a quantitative measurement of certain aspects of reading, including oral reading fluency as well as oral retelling of passages for comprehension.

The teachers indicated that since the students in their classes came from environments with high levels of poverty, that their background experiences were not adequate to understand many of the expository text materials, including the science book, and that the levels of the expository text in most textbooks is too difficult for their students to read.

However, the researcher noticed that in the majority of the classroom observations, the teachers used a minimal amount of various informal measures during the science instruction. The researcher observed that there was high engagement of students with conversations about science
topics. However, the researcher observed that there was no lesson model that included statement of an objective, input and modeling, guided and independent practice, and some method of assessment or evaluation for each lesson. The researcher observed that the teachers had minimal documentation of actual planning for assessment or evaluation for the students’ science lessons. They key informant voiced her concern for the teachers’ lack of informal assessment or evaluation for the science lessons.

It was noted, however, that during most of the classroom observations, the researcher noticed that the students received constant verbal feedback with reinforcement throughout the classroom discussions, and that the teachers extended the students’ answers during oral discussions. There was infrequent use of other informal assessment, such as hand signaling for understanding, or think pair share conversations among the students or student partners during the observations. As an observer, it was difficult to document the types of assessment that were occurring during the lesson. The researcher noted a concern that there was minimal use of informal assessment to monitor student comprehension of the verbal discussions. This concern can provide opportunities for further research about how to make print connections through conversations about expository text topics.

Teachers, during the observations, frequently were in close proximity of the students and monitored the students’ work during assigned seatwork, but there was little or no written or documentation of lesson closure or lesson assessment or evaluation. In one of the informal interviews with the key informant, the key informant expressed concern that as a math coach she had to observe each teacher and document the observations for math. During the interview, the key informant provided significant insight that assessment or evaluation may not be taking place during science instruction. The researcher agreed with the key informant that that issue seemed
to be a common concern, and when the researcher looked at the science lesson plans, there was no evidence of science assessments or evaluations reflected in the science lesson plans for the science instructional time. It was also noted that there were no objectives stated for the science instruction since there were no lesson plans.
CHAPTER 5: CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

The purpose of this study was to explore reading strategy instruction related to expository science text in second, third, fourth and fifth grade. Although there were a variety of questions that warranted consideration within the area of reading strategy instruction, the researcher chose to narrow the focus of this study so that an in-depth analysis could be conducted and inferences could be made.

By referring back to the two original research questions, a framework developed for the summary of the findings. When considering the questions presented in Chapter 1, an understanding about how that research can be associated with the findings of this research can be developed.

Six teachers participated in the study provided awareness and understanding to provide a framework for the findings of this study in order to make implications about the findings.

The research centered on two central queries while conducting this exploration.

1. How do elementary teachers use reading strategies related to expository science text?
2. How, if any, is reading strategy instruction related to expository science text between second, third, fourth, and fifth grade similar? How is it different?

Research Question 1

How do elementary teachers use reading strategy instruction related to expository science text in grades 2-5? First, we will examine how the six elementary teachers who participated in this study used reading strategy instruction that was related to science expository text materials.

Strategy instruction occurs within the context of real reading events. Comprehension strategies are blended into meaning-oriented discussions surrounding text. A teacher initially contributes more than the students in the discussions, through explaining and demonstrating
strategic reasoning, and then transfers the responsibility of reasoning to the students. The six teachers in this study regularly transferred the responsibility of class discussions to the students.

Fielding and Pearson (1994) identified four components of comprehension strategy instruction that follow the gradual release of responsibility approach that include teacher modeling, guided practice, independent practice, and application of the strategy in real reading situations.

Strategy instruction helps students who are struggling with the text become aware of, use, and develop control over learning strategies (Palinscar & Palinscar, 1984). Explicit instruction, however, attempts not only to show students what to do, but also why, how, and when. Pearson (1982) concluded that such instruction helps “students develop independent strategies for coping with the kinds of comprehension problems they are asked to solve in their lives in schools” (p. 22). As a result, readers become successful readers in their everyday lives.

McKeown, Beck & Blank (2009) emphasized that the strategies approach to teaching reading comprehension strategies centers on the direct teaching of specific procedures, such as summarizing, making inferences, and generating questions, and using them in working with text. In several of the classroom observations for this study, most of the teachers used a strategies approach during the class discussions, but there was minimal evidence that the application of the strategies were extended into connections with text after the strategies had been learned. One important component of strategy instruction is that the students be able to use the strategies in working with expository text materials.

Strategy-based instruction can be viewed from the traditional perspective framework of before, during, and after reading. The strategies approach to teaching reading developed from models of thinking and learning processes, whereas the content approach of teaching reading
stems from a model of text processing. More importantly, the researcher in this study observed that there was little opportunity for the students in Teacher A, B, D, E, or F’s class to apply their strategies to text. However, Teacher C frequently made connections to students own experiences, previous text that they had used in class, and reasons why the text was important in their daily life. Some connections that were made to the text at hand helped the students to make text connections that would help them process other texts.

One crucial implication of the processing models is that the learners need to be mentally active to process text successfully (McKeown, et al., 2009). The strategy-based instruction model aims at engendering active student engagement with reading. Most of the teachers throughout this study had high levels of student engagement during the classroom observations.

Perhaps the most widely cited recommendation for increasing reading comprehension is increasing explicit instruction in reading comprehension strategies (NRP, 2000). In its report, the NRP (2000) highlights the importance of comprehension strategy instruction, explaining, “The idea behind explicit instruction of text comprehension is that comprehension can be improved by teaching students to use specific cognitive strategies or to reason strategically when they encounter barriers to comprehension when reading (p. 4-39). The NRP (2000) listed some reading strategies that were supported by their research.

The NRP (2000) found research evidence for the following eight reading comprehension strategies.

- Comprehension monitoring
- Cooperative learning
- Graphic and semantic organizers
- Story structure
- Question answering
- Question generation
- Summarization
- Multiple strategy instruction

While none of the six teachers who participated in this study utilized all eight strategies, between them, the six teachers regularly used most of the reading strategies. One out of the six teachers, Teacher F, used cooperative learning groups during the observed science instruction, and related the instruction to science expository text about the circulatory system. The researcher noted that none of the other six teachers in the study used cooperative grouping during the science classroom observations. Large group instruction was predominantly used by all six of the teachers in this study.

All of the teachers involved in this study used large group instruction most of the time. Teacher A & B used large group instruction, but the groups was sat on the classroom floor in a large group carpeted area; whereas, Teacher C, D, E, & F arranged their classroom so that their students sat in rows of desks that lended well to large group instruction. The teachers, as a whole, favored large group instruction during the science observations.

During the observations, Teacher A, Teacher D, Teacher E, and Teacher F provided large group instruction using Power Points that emphasized graphic organizers to organize the information about the science lesson. For the most part, there was minimal modeling of any graphic organizers, but the teachers reviewed graphic organizers that the students had used in previous science lessons. For example, Teacher A used a flow chart and Teacher E and F used charts that were cyclical in nature to depict the life cycle of a frog.
Story structure is a strategy that focuses on the five w’s (who, what, when, where, and why) and focuses on the characters and plot in a story. This strategy was not implemented by any of the six teachers for any of the science observations. Although story structure is usually emphasized in narrative texts used in elementary grades, the researcher did not note any use of modeling of analyzing text structure during science instruction related to actual expository text during this study. One possible reason that story structure or text structure was not used during the science instruction is that there was minimal use of expository text throughout the study. Although the teachers in this study maximized the use of conversations and discussion, there were minimal references to actual connections with expository text materials. The use of story structure and signal words in text structure could be an implication for further study.

Question answering was utilized by all six teachers in this study, and throughout most the observations. The researcher’s observations recorded that all six of the participants in the study used questions that used both higher level (analysis, synthesis, and evaluation) and lower level (knowledge, comprehension, and application) questioning during the whole group discussions about science topics. The six teachers used questioning strategies frequently and effectively to extend discussion and clarify misunderstandings. Most of the six of the teachers has high levels of engagement and student participation during the group observations that involved questioning strategies.

One strategy that was minimally utilized during most of the observations was question generation out of the context of the science lessons. Although most of the six teachers effectively generated both higher level and lower level questioning strategies using the Bloom’s taxonomy of cognitive levels of thinking (knowledge, comprehension, application, analysis, synthesis, and evaluation) to extend or clarify students’ misunderstandings, there was a minimal
use of question generation during the lesson that evolved from within the context of the lesson or topic.

Summarization was a term used by the teachers during the observations; however, looking for the main idea and putting it into the students’ own words was often used. The students were frequently asked to retell a situation in their own words, especially in Teacher C’s class. Teacher E and F also frequently had students summarize and put ideas into generalizations.

In summary, most of the six teachers regularly used most of the eight strategies that have been cited as the most widely used strategies that are used to increase reading comprehension.

Research Question 2

How, if any, is reading strategy instruction related to expository science text similar between second, third, fourth and fifth grade? How is it different?

The second research question compared and contrasted how strategy instruction related to expository text is similar between second, third, fourth, and fifth grade. In analyzing the observations and the interviews and observations from the six teachers in this study, the researcher noted that there was minimal exposure to a variety of expository text resources that are available for teachers to use with elementary students in all grade levels second through fifth grade. As Wandersee (2001) has noted, during the past decade, there has been more availability of teaching resources and instructional alternatives available. Therefore, teachers have choices about where to locate expository text materials, and they have multiple strategies to select from to assist them in teaching expository text structures that complement the sociocultural conversations and discussions that occur during science instruction. However, during the duration of this study, the observations of the teachers that were studied used a limited variety of
expository text materials, and the majority of the materials utilized in this study by third, fourth, and fifth grade teachers included test practice student worksheets that utilized expository text.

Beginning readers take a step in instruction when they transition between decoding print to more fluent meaning-focused print (Chall, 1996). During the past few years, teachers have been increasingly aware of the need to help students understand the meanings that are embedded in expository text. For students to survive in the 21st Century, they must develop a greater familiarity with expository text to ensure their success as productive citizens.

There is a multitude of expository text materials available to even young children. The most popular basal reading series now used in schools have components that include leveled readers. The leveled readers are on many instructional reading levels and include expository text topics at all grade levels.

One of the conclusions of this study is that there was minimal alignment of the science program at this study site with the basal reading series that was being implemented on the research site. The concern was voiced by the principal, the key informant, and most of the teachers.

The various text structures including description, sequence, comparison and contrast, cause and effect, and problem and solution are well written on the instructional levels of various abilities of students. The leveled readers included in the basal reading component are ideal for exposing the younger students in kindergarten through second grade to well written expository text materials.

Those same common text structures are used in the more sophisticated leveled readers for the older students in third, fourth, and fifth grades. The frameworks of the text structures for expository text are basically the same.
The Information Age has changed what it means to be literate (Reinking, 1998). However, the literacy demands of our society demands that students be able to read and write, and be able to synthesize various types of text and text structures that they see in their daily lives. Understanding expository text in the elementary grades is necessary for students to connect different types of printed texts with experiences that connect with their own daily lives.

Knowledge of the structure of different text genres develops over time, and becomes more complicated in the upper elementary grades. Jason, an eight year old that was used as an example in Chapter 3, was a struggling reader who had difficulty with “the little words in the big words” and alluded to the fact that he had “thin books when the other children had thicker books” and he wondered why he could not read.

Students need rich exposure to expository text materials and in gaining expertise in understanding expository text. Goldman & Rakestraw (2000) and Pearson & Duke (2002) emphasized that students who learn to use the organization and structure of the informational texts are better able to understand and retain the information found in them.

The informational books that are available to teachers are very similar in nature in that they all use the most common text structures that are frequently referred to throughout this study. The second and third grade level informational books provide organizational patterns that allow students to follow an author’s message. As text becomes more difficult with dense technical vocabulary pertaining to science instruction in the upper elementary grades, and the type information in the graphs, tables, and other information that is used in expository text, even though the text structures are similar in nature, they are notably more complex and the vocabulary becomes more difficult, as well.
At the beginning of this study, the six participating teachers emphasized that they thought that the science textbooks were too difficult for the students to read, so they did not use them during science instruction. The researcher observed that the teachers did not use informational books for instruction. Teacher A, however, integrated the basal reading selection with the flow chart graphic organizer depicting the life cycle of a frog. Teacher C used an informational reader for during one of the observations with the third grade. For the most part during classroom observations for this study, there was limited evidence of the teachers’ use of an informational science textbook and very limited use of any expository text at all except student booklets with state standardized test practice sample items. Students had limited exposure during this study to a variety of informational or expository text materials.

The researcher noticed that the teachers used common reading strategies to extend the students’ conversations to increase students’ background knowledge, but the level and variety of the expository text was extremely limited across the grade levels spanning from second through fifth grade. This lack of exposure to a variety of expository text across grade levels may have been viewed as one of the limitations in this study. How are students in who are transitioning from emergent readers going to learn to use expository text structures if they are not exposed to a variety of text? How do intermediate learners learn to use a variety of expository text if they have limited exposure to expository materials after second grade?

The easier text structures such as sequencing and comparison and contrast tend to be easier for the younger students to grasp, while description, cause and effect, and problem are solution are more challenging (Moss, 2004). Moreover, students in the elementary grade levels must be taught how to draw conclusions from expository text, but they need constant exposure to many types of text structures used in expository text. As students grow more comfortable and at
ease with expository text, elementary students will find it easier to move beyond the recitation of mere facts to more meaningful connections with expository text. The connections to the expository text will be useful to make connections to events in their own daily lives.

Implications for Further Research

Alignment of the elementary science curriculum with the current basal reader programs could offer additional insight about how teachers can integrate additional strategy instruction into the science content area. Expanding the two original research questions may lead to continued inquiry into how teachers use reading strategies with expository text in grades 2-5 could offer additional insight into strategies that teachers can implement in their own classrooms.

Other research opportunities exist with regard to the cultural aspects of working with populations of students who have high levels of poverty and how the cultural aspect affects their performance in reading. Opportunities for research also exist about integrating the reading strategies across the curriculum of the content areas in order the cross the borders of the content areas using a variety and exposure to many types of expository text.

Opportunities for research also exist about integrating the reading strategies across the curriculum of the content areas in order the cross the borders of the content areas using a variety and exposure to many types of expository text.

Connecting conversation to visual print and graphic resources can be furthered expanded to research how printed text carries visual information to help students use multimodal texts to convey information about science topics. Future research in the area of using reading strategies with multimodal informational text might be beneficial to build successful readers for the 21st Century, and how interaction with print with both the visual and verbal modes might lead to improved reading comprehension.
Implicit Findings of the Study

Some implicit findings of this exploration have implications for further research. An important finding is that science instruction in this school was during the last thirty minutes of the school day. At the end of the school day, teachers are finishing the school day, some students are being pulled out of their classrooms for interventions for reading and math, and sometimes students may have to leave school early for early dismissal or other special reasons. What does this tell us about how we rank the importance of imparting science information and instruction to elementary students?

Implicit findings of this study reveal that not enough time is available during the school day to teach science. There is an implication that the science instructional time is not integrated with other subject areas because the teachers are using instructional time to meet the time mandated to teach reading and math. Further research can be conducted about the implication of the need to integrate science expository text with other subject areas in order to give priority to science instruction related to printed materials other than standardized test practice materials.

An implied finding from this study indicates a need for formative assessment strategies during science instruction that will indicate whether the students comprehend the science instruction. Since the science instruction was predominantly oral in nature, we do not know if students understood the information about science topics through oral discussions.

An implicit finding of this study indicates that science instruction is not as prioritized as reading and math, nor is it integrated throughout the day into other subject areas. There is an implication in terms of social desirability that evolved from this study. What is happening when a researcher is not in the science class during the last thirty minutes of the day?
REFERENCES


*Journal of Educational Psychology*, 76, p. 1065-1075.


APPENDIX A: CONSENT FORM

Title of study: An Exploration of Strategy-Based Reading Instruction on Comprehension Using Expository Text in Grades 2-5

Researcher: Carol Fetters, cfette1@lsu.edu, Phone: 409-283-1819 Available: 8 a.m.-5 p.m.

Purpose: The present study aims to examine reading comprehension strategy instruction related to expository science text in grades 2-5.

Research Procedures: A multiple case study method will be employed using six elementary teachers in Grades 2-5 on an elementary school campus located near a university in Baton Rouge, Louisiana. The study will involve six teachers, the principal, and a key informant who is a reading specialist housed on the campus.

Potential Risks: There are no apparent risks to any participants.

Potential Benefits: The main benefit of this study is that it will add to the body of reading research knowledge about reading strategies that teachers use related to expository science text.

Participation: You may choose not to participate in the study, and you may withdraw from the study at any time without penalty. Your relationship with the school, researchers, or Louisiana State University will not be damaged in any way if you choose not to participate in the study or if you decide to withdraw from the study.

This study has been approved by the Institutional Review Board (IRB) of Louisiana State University. If you have questions regarding the IRB, please contact:

Dr. Robert Mathews, Chair
131 David Boyd Hall
Baton Rouge, La. 70803
Phone: 225-578-8692
Lsu.edu/irb

Confidentiality: Confidentiality will be ensured. Names will only be released to research team members. Data will be kept in a locked file cabinet when not being gathered.

Signature: “I have been fully informed of the above-described procedure, its possible benefits and risks, and I am willing to participate in this study.”

_________________________    ____________________
Participant’s Signature       Date
APPENDIX B: PRINCIPAL INTERVIEW QUESTIONS

Background/Education:
1. Describe the geographic locations where you were born and raised.
2. What universities or colleges did you attend and what professional certificates do you hold?
3. Do you hold professional certificates in states other than Louisiana?
4. How many years experience do you have as an educator? What levels and subjects have you taught before you became a principal?
5. How many years experience do you have as a principal?
6. How do you remain current in best practice as well as current policies and mandates?

Instructional Philosophy and Viewpoints:
7. Why did you decide to become an elementary principal?
8. How do you include parents in their child’s education?
9. How do you motivate parents?
10. How do you motivate your teachers?
11. How do you motivate your students?
12. Describe the most difficult aspect of being a principal.
13. How do you provide your staff with professional development?
14. Describe how you recommend for teachers to differentiate instruction.

Reading Strategy Instruction:
15. What type of reading program does your school use now?
16. How long has the school used the reading program?
17. Do you modify the reading curriculum? How?
18. Do you expand instructional time? How?
19. What do you think are the top five most beneficial skills for students to possess?
20. Describe how standardized testing affects instruction?
21. What are the most important qualities that an exemplary teacher possesses?
22. How do you integrate technology into the curriculum?

Science Instruction:
23. What program is in place for science expository text instruction?
24. Why (or why not) do you recommend student choice in science text materials?
25. How do teachers group for reading and science instruction? Why?
26. What are the biggest barriers to effective science expository text instruction?

Assessment:
27. How do you evaluate your own leadership performance?
28. How do you evaluate the performance of teachers using expository text instruction in science?
29. What types of assessments do you expect your teachers to implement in reading and science text instruction? What types of assessments are they presently using?
30. Describe what you look for to evaluate that learning is taking place in the science or reading classroom.

Adapted from Ortlieb (2007)
APPENDIX C: CLASSROOM TEACHER INTERVIEW QUESTIONS

Background/Education
1. Describe the geographic location where were you born and raised.
2. Which university or college did you attend and what degrees and professional certificates do you hold? Do you hold certificates in other states other than Louisiana?
3. How many years of teaching experience do you have?
4. What other grade levels/subject areas have you taught?
5. What is your present teaching assignment?
6. Describe special training you have received to use strategies with expository text.

Philosophy of Education:
7. Why did you choose teaching as a career?
8. How do you differentiate instruction for your students’ varying abilities?
9. How do you include parents in their child’s education? How often?
10. What are the five most important qualities of an exemplary reading teacher?
11. How do you evaluate your own teaching performance, and how do you remain current with best practice?

Instructional Approaches:
12. How do you teach science to a classroom of students with varying abilities?
13. What type of science program do you use at your school?
14. What type of reading program do you use at your school?
15. Do students have choice in selecting expository text for science?
17. What types of science curriculum materials are available at your school?
18. How do you use teaching materials to teach expository science information?
19. How do you integrate technology into your science classes?
20. Describe the most difficult barriers to teaching science using expository text.

Strategy Instruction:
21. Describe the five most effective strategies you use to teach science.
22. How and when do you model strategies for using expository text?
23. What do you consider the top five reading strategies for all students?
24. What do you find that students struggle most with in reading expository text?
25. How do you use modeling of strategies to develop independent use of the strategies?
26. How do you engage the students in the use of teaching strategies for science?
27. Describe how much of your teaching (science) relates to standardized instruction?

Classroom Management:
28. How do you ensure effective classroom management?
29. How important is communication with parents and guardians?
30. Describe your favorite modeling strategy you use to motivate your students.

Assessment:
31. How do you evaluate and monitor student progress in science?
32. What types of assessment do you use? Is it primarily informal, formal, or authentic?
33. Explain how you evaluate the learning that is taking place in your classroom.

Adapted from Ortlieb (2007)
APPENDIX D: KEY INFORMANT INTERVIEW QUESTIONS

Background/Education:
7. Describe the geographic locations where you were born and raised.
8. What universities or colleges did you attend and what professional certificates do you hold?
9. Do you hold professional certificates in states other than Louisiana?
10. How many years experience do you have as an educator? What levels and subjects have you taught before you became a math coach?
11. How many years experience do you have in instructional support?
12. How do you remain current in best practice as well as current policies and mandates?

Instructional Philosophy and Viewpoints:
7. Why did you become a reading specialist? What is your present position?
31. How do you include parents in their child’s education?
32. How do you motivate parents?
33. How do you motivate your teachers?
34. How do you motivate your students?
35. Describe the most difficult aspect of your job.
36. How do you provide your staff with professional development?
37. Describe how you recommend for teachers to differentiate instruction.

Reading Strategy Instruction:
38. What type of reading program does your school use now?
39. How long has the school used the reading program?
40. Do you modify the reading curriculum? How?
41. Do you expand instructional time? How?
42. What do you think are the top five most beneficial skills for students to possess?
43. Describe how standardized testing affects instruction?
44. What are the most important qualities that an exemplary teacher possesses?
45. How do you integrate technology into the curriculum?

Science Instruction:
46. What program is in place for science expository text instruction?
47. Why (or why not) do you recommend student choice in science text materials?
48. How do teachers group for reading and science instruction? Why?
49. What are the biggest barriers to effective science expository text instruction?

Assessment:
50. How do you evaluate your own leadership performance?
51. How do you evaluate the performance of teachers using expository text instruction in science?
52. What types of assessments do you expect your teachers to implement in reading and science text instruction? What types of assessments are they presently using?
53. Describe what you look for to evaluate that learning is taking place in the science or reading classroom.

Adapted from Ortlieb (2007)
APPENDIX E: TEACHER OBSERVATION FORM

Teacher: ____________   Grade:  _______ Date: _________   Topic of Lesson______________
Observation # ______________

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<tr>
<th>Instruction:</th>
<th>Whole Group</th>
<th>Small Group</th>
<th>Individual/Partner</th>
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<td>Comments:</td>
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<th>Teacher-centered or Student-centered Activity:</th>
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<tr>
<td>Comments:</td>
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</table>

<table>
<thead>
<tr>
<th>Questioning:</th>
<th>Bloom’s Taxonomy Questioning, Higher Level (analyze, compare/contrast, distinguish, evaluate, select, construct, design, etc.)</th>
<th>Bloom’s Taxonomy Questioning, Lower Level (list, recall, define, discuss, explain, illustrate, solve)</th>
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<tr>
<td>Comments:</td>
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<table>
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<table>
<thead>
<tr>
<th>Instructional/Literacy Strategies</th>
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<tbody>
<tr>
<td>Clearly stated objectives:</td>
</tr>
<tr>
<td>Included Evaluation/assessment or lesson closure:</td>
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<tr>
<td>How?</td>
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### Teacher Modeling/Input

<table>
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<th>Type of expository materials (description)</th>
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<tr>
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<td>Choice of reading materials for students:</td>
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<td>Comments:</td>
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<td></td>
<td>Other expository materials used for the lesson:</td>
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<td>Comments:</td>
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<table>
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<th>Comprehension strategies:</th>
<th>Comparing/Contrasting</th>
<th>Summarizing/Retelling</th>
<th>Cooperative learning</th>
<th>Graphic organizers</th>
<th>Other:</th>
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<td>Comments:</td>
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Additional Notes:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
APPENDIX F: TEACHER RATING SCALE FOR CLASSROOM OBSERVATIONS

Classroom Teacher: ________________________     Date: ____________________________

Rating Scale: 1-5:

1 never exhibits 4 mostly exhibits
2 rarely exhibits 5 always exhibits
3 occasionally exhibits

1. teacher bases instruction on data gathered through prior or current reading
   1  2  3  4  5

2. models reading strategies for students
   1  2  3  4  5

3. scaffolds learners to increase their skill and reading ability
   1  2  3  4  5

4. uses verbal communication to enhance the learning environment
   1  2  3  4  5

5. implements consistent classroom management skills
   1  2  3  4  5

6. utilizes small group instruction during science instruction
   1  2  3  4  5

7. designates time for students to read independently
   1  2  3  4  5

8. allows opportunities for students to use higher order thinking
   1  2  3  4  5

9. individualizes instruction according to needs of students
   1  2  3  4  5

Adapted from Ortlieb (2007)
APPENDIX G: OBSERVATIONAL TABLE OF THE NINE COMPONENTS
OF EVERY SOCIAL SITUATION

Space (the physical place or places)

Actors (the people involved)

Activity (the set of related acts people do)

Object (the physical things that are present)

Act (single actions people do)

Event (a set of related activities that people carry out)

Time (the sequencing that takes place over time)

Goal (the things people are trying to accomplish)

Feeling (the emotions felt and expressed)

Additional notes:
VITA

Carol Wade Fetters has been an educator for over twenty-five years. Carol has served as a classroom teacher K-12, and as a principal, district supervisor, and a central office administrator. Currently, Carol is a student at Louisiana State University in Baton Rouge, Louisiana, and serves as a graduate assistant who teaches a reading assessment class to university students who are studying reading education.

Carol received her Bachelor of Science degree in elementary education with a minor of study in English from Lamar University in Beaumont, Texas, in 1971. She received a master’s degree in education from McNeese State University in Lake Charles, Louisiana, in 1975. Certification in Educational Administration was completed at Houston Baptist University in Houston, Texas, in 1994. Carol completed the Reading Specialist certification at Louisiana State University in Baton Rouge, Louisiana, in 2010.