Comparison of the effects of training in expository text structure through annotation textmarking and training in vocabulary development on reading comprehension of students going into fourth grade

Lily Janise Gentry
University of South Florida

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Comparison of the Effects of Training in Expository Text Structure Through Annotation
Textmarking and Training in Vocabulary Development on Reading Comprehension of
Students Going Into Fourth Grade

by

Lily Janise Gentry

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Interdisciplinary Education
College of Education
University of South Florida

Major Professor: Arthur Shapiro, Ph.D.
William Benjamin, Ph.D.
Barbara Frye, Ph.D.
Robert Dedrick, Ph.D.

Date of Approval:
March 10, 2006

Keywords: reading strategies, instruction, elementary, gender differences, content areas

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DEDICATION

This work is dedicated to my family for their love, unfailing encouragement, and support in helping me to accomplish a life-long goal. I thank my daughter and her husband for their faith in my ability to achieve this doctorate, and for their patience and understanding when research interfered with opportunities for family time.

I am grateful to my parents and grandmother, my greatest teachers, for instilling in me the value of learning, endurance, and thorough commitment to the completion of tasks. Without that early support, this research would not have begun, and their constancy to help me achieve has been a source of my strength and guiding light throughout this journey.

I especially am thankful for the love, advice, and support of my mother. Her countless hours of devotion helped ease the burden and responsibilities of proofreading, fine-tuning, and polishing this dissertation. I cannot thank her enough for helping me reach this pinnacle in my educational career.
ACKNOWLEDGMENTS

The completion of this dissertation is the result of professional and personal support and encouragement from many people, each a catalyst for my success. I wish to acknowledge those individuals who have given much time, effort, and their unique contributions that have enabled me to write this dissertation.

To Dr. Arthur Shapiro, my major professor and mentor, I give very special thanks and heartfelt appreciation for his encouragement, guidance, enthusiasm, sense of humor, and friendship that facilitated my research and writing efforts throughout the years. As he is a well-known author in various fields of educational leadership and policy studies, I am most grateful for his editing advice and suggestions. Dr. Shapiro will remain an inspiration to me for the rest of my life. I know I can reach challenging goals logically, calmly, and with cheeriness and lightness of heart.

I warmly express my sincere gratitude to Dr. Robert Dedrick, another member of my committee, whose unwavering confidence guided me through times of uncertainty. I am most appreciative for both his generous sharing of time and expertise as I strove to develop a vision of a path that would clearly express the statistical findings and results of the study “exactly from one point to the other.” His suggestions and thought-provoking questions were invaluable.

I am grateful also to Dr. Barbara Frye, my favorite professor in my Language Arts Master’s program and a member of my committee, for encouraging me throughout the
years to achieve my goal. It was at her suggestion and Dr. William Benjamin’s same
suggestion given at an earlier time, that I expanded my research study to encompass
another reading strategy for comparison. In doing so, the study was deeply enriched with
additional findings and implications for further research.

I give many thanks to Dr. William Benjamin, also on my committee and a well-
known author in various fields of educational leadership and policy studies, for his
constructive advice and kind encouragement to enhance my research study with “Brand
B,” the comparison group that contributed to a more interesting study and rich endeavor.
Dr. Benjamin was the control tower, keeping me on the dissertation flight plan of
scheduled formalities and manuscript deadlines so that I could reach my destination.

My gratitude also is given to Dr. Diane Reese and Dr. Paula Zielonka, reading
professors who taught in the College of Education at the University of South Florida and
have supervised interns out in the field. They were instrumental in helping me select the
appropriate reading level for the standardized tests, as well as assisting me with the
categorization of student materials according to purpose of instruction. I am most
appreciative of their time and involvement with their informal observation, a most
contributing factor that enhanced the internal validity of this study.

My appreciation is extended to Monsignor Caverly of St. Raphael’s Church for
providing me with a most aesthetic and comfortable site for the study, and to my friend,
Ken Dandar, Esq., for his help in making it possible.

Finally, I give many sincere thanks to the children who volunteered and
participated in the summer reading workshop sessions. Without their enthusiasm,
involvement, and commitment, this study simply could not have occurred.
**TABLE OF CONTENTS**

LIST OF TABLES vi

LIST OF FIGURES viii

ABSTRACT ix

CHAPTER ONE: INTRODUCTION TO THE STUDY 1

Introduction 1
The Problem and Its Significance 5
Purposes and Significance of the Study 8
Research Questions 11
Hypothesis 11
Method 12
Definitions 13

Key Variables 13
Independent and Dependent Variables 13

Key Terms 14

Annotation 14
Cognitive Processes Involved in Learning From Text 14
Contextually Relevant Vocabulary Development 14
Direct Vocabulary Instruction 15
Explicit Instruction 15
Expository Text 15
Gender Differences and Academic Achievement 16
Inexplicit Vocabulary Instruction 16
Informational Text 16
Metacognition 17
Schema-Theoretic View of Reading Comprehension 17
Strategy Instruction 17
Strategic Learning 18
Traditional Vocabulary Instruction 18
Top-Level Structure of Expository Text 18
Vocabulary Development 19

Delimitations and Limitations 19

Delimitations 19
Limitations 20

Text Structure and Annotation 20
Vocabulary 21
<table>
<thead>
<tr>
<th>Duration of Instruction</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>22</td>
</tr>
<tr>
<td>Overview</td>
<td>25</td>
</tr>
</tbody>
</table>

CHAPTER TWO: REVIEW OF THE LITERATURE

Strategic Instruction

Strategic Instruction and Expository Text

Knowledge and Use of Reading Strategies by Proficient and Less Proficient Comprehenders

The Effect of Students’ Awareness of Top-Level Text Structure on Comprehension and Recall

Basic Types of Text Structure

Multiple Strategies to Enhance the Use of Text Structure

Annotation

Signal Words

Spacial Organizers

Generating Questions

Effects of Text Structure on Comprehension and Recall

Kletzien’s Study

Exposing Children in Primary Grades to Informational Text

The Relationship of Annotation Textmarking Strategy to Expository Text and Reading Comprehension

Organizing Informational Text: Text Structure and Annotation

Main Ideas

Types of Annotation Problems

The Relationship of Vocabulary Development and Reading Comprehension

Vocabulary Knowledge and Reading Achievement

Vocabulary Development

Vocabulary Instruction

Learning Words Through Context

Analyzing Word Structure

Dictionaries and Definitions

Vocabulary Testing

Gender Differences and Academic Achievement

Gender Science

Gender and Academic Achievement

Reading Attitudes

Summary and Synthesis

Overview

CHAPTER THREE: METHOD

Purposes of the Study

Research Questions

Hypothesis
### Conclusions

Factors Contributing to the Outcome of the Study
- Background Knowledge and Experience
- Reading Ability
- Age and Maturity
- Gender

Implications

Limitations of the Study

Recommendations for Future Research
- Text Structure and Annotation
- Multiple Strategies
- Vocabulary and Reading Comprehension
- Factors Contributing to Outcome
  - Participants
  - Time
  - Maturity
  - Teacher Training
  - Tests
- Gender Differences
- Textbooks

### LIST OF REFERENCES

### APPENDICES

- Appendix A: Review of the Literature
- Appendix B: Five Expository Text Structures
- Appendix C: Examples of Basic Text Structures
- Appendix D: Text Units and Commonly Associated Words and Phrases
- Appendix E: AListing of Several Frames and Their Corresponding Questions From Secondary Science Textbooks
- Appendix F: School Demographics
- Appendix G: Letter of Invitation to the Study
- Appendix H: Curriculum for TSA Group
- Appendix I: Curriculum for VK Group
- Appendix J: Paragraph Examples From *Getting the Main Idea*
- Appendix K Cover Page: Examples of TSA Students’ Practice Sheets for Progression of Skill Attainment
- Appendix K-1: Topics
- Appendix K-2: Stated Main Ideas
- Appendix K-3: Supporting Facts
- Appendix K-4: Charting and Predicting Test Questions
- Appendix L Cover Page: Examples of TSA Students’ Paragraphs Used for Mapping, Charting, and Predicting Test Questions
- Appendix L-1: Simple Listing
LIST OF TABLES

Table 1. Reliability Coefficients for the Vocabulary and Comprehension Scores of the SDRT4, Forms J and K
Table 2. Means, Standard Deviations, Skewness, and Kurtosis of the Vocabulary Group (VK) and Test Structure Group (TSA)
Table 3. Correlations Between Pretest, Posttest, and Follow-up Test Measures on the SDRT4 Forms J and K
Table 4. Unadjusted Means, Standard Deviations, Adjusted Means, Skewness, and Kurtosis on the Vocabulary Posttest of the SDRT4, Form K
Table 5. Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Vocabulary Posttest Scores with Pretest Vocabulary as a Covariate
Table 6. Unadjusted Means, Standard Deviations, Adjusted Means, Skewness, and Kurtosis on the Vocabulary Follow-up Test of the SDRT4, Form J
Table 7. Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Vocabulary Follow-up Test Scores With Pretest Vocabulary as a Covariate
Table 8. Unadjusted Means, Standard Deviations, Adjusted Means, Skewness, and Kurtosis on the Comprehension Posttest of SDRT4, Form K
Table 9. Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Comprehension Posttest Scores With Pretest Comprehension as a Covariate
Table 10. Unadjusted Means, Standard Deviations, Adjusted Means, Skewness, and Kurtosis on the Comprehension Follow-up Test of the SDRT4, Form J
Table 11. Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Comprehension Follow-up Test Scores With Pretest Comprehension as a Covariate

Table 12. Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Comprehension and Vocabulary Posttest and Follow-up Test Scores
LIST OF FIGURES

Figure 1. The Interaction of Treatment Effects and Gender Adjusted Mean Scores on the Vocabulary and Comprehension Components of the SDRT4 Posttest and Follow-up Test 153
COMPARISON OF THE EFFECTS OF TRAINING IN EXPOSITORY TEXT STRUCTURE THROUGH ANNOTATION TEXTMARKING AND TRAINING IN VOCABULARY DEVELOPMENT ON READING COMPREHENSION OF STUDENTS GOING INTO FOURTH GRADE

Lily Janise Gentry

ABSTRACT

Fifty-seven pre-fourth-graders from 14 private schools participated to determine (a) if teaching text structure with annotation produced higher comprehension scores than the method of teaching vocabulary, and (b) if the effect of instructional method on reading comprehension was the same for male and female students. Effects were measured by immediate posttest and follow-up test NCE scores of the Stanford Diagnostic Reading Test, Fourth Edition (SDRT4) containing components of Comprehension and Vocabulary.

The design was a true experiment using a matched comparison-group format. Participants were placed in one of two independent 3-week reading workshop sessions, then randomly assigned to one of two conditions: (a) finding text structure when reading expository text and annotating (TSA group), and (b) extending vocabulary knowledge (VK group). The second session duplicated the first with different participants. Each group received five two-hour lessons.

The hypothesis was that scores on the immediate posttest and follow-up test (two months later) on the Comprehension component of the SDRT4 would be higher for pre-fourth-graders in the TSA than in the VK group. The hypothesis was not supported by
results of a two 2 (Method) X 2 (Gender) analysis of covariance (ANCOVA) with the pretest as the covariate. Analyses indicated:

1. Reading comprehension and vocabulary scores on the immediate posttest and the follow-up test were not statistically significantly higher for TSA compared to VK students.

2. Females scored significantly higher on the Vocabulary and Comprehension posttest.

3. The interaction of Method X Gender was statistically significant on the Vocabulary follow-up test, males benefiting more from vocabulary instruction.

Implications suggest: (a) teacher education courses address gender learning differences and schools should examine curricula for male- and female-friendly standards; (b) this study’s vocabulary method of instruction inspired children to use new words in speaking and writing; and (c) identifying text structure and annotating are developmental, maturational skills.

Maturity level and gender differences in learning raise questions: At what grade level should text structure with annotation be implemented? How can this method be taught to accommodate gender learning differences?
CHAPTER ONE

INTRODUCTION TO THE STUDY

The following sections in this chapter include the introduction, the research problem and its significance, purposes of the study and intended contribution to research, the research questions, the hypothesis, method, definitions of key variables and key terms, delimitations, limitations, assumptions, and summary.

Introduction

Students are expected to read, comprehend, and answer questions based on the information read in expository textbooks. In this Information Age (Duke, 2000), the ability to read critically informational text is essential for student survival and occupational success. An abundance of past and current research literature concludes, unfortunately, that students of all ability levels struggle to comprehend expository texts used in schools (Goldman & Bisanz, 2002). To compound this problem, the very nature of expository text can sometimes sabotage the comprehension process. Students are unfairly challenged when unfamiliar content-specific vocabulary is presented without sufficient background information to help them comprehend, or when there is a lack of appropriate context clues and other word relationships to help them connect ideas and make sense of new concepts. Concerning strategies for below average struggling students to better comprehend expository text, Hall (2004) questioned if the resolution lay in the teaching method, the text itself, or both.
Influenced by cognitive psychologists' understanding of cognition and metacognition, one fundamental issue in reading research over the last 30 years comprises the strategic processes that readers use to construct meaning from text (Kletzien, 1992). Baker and Brown (1984) suggested that one difference between strong and weak reading comprehenders is their ability to use comprehension strategies and to know which particular strategies are valuable. Successful students are often aware of study strategies that work for them. Less successful students, having a different perspective of their locus of control (Sarason, 1982), often attribute luck or conditions beyond their control for their lack of success (Pressley, Goodchild, Fleet, Zajchowski, & Evans, 1989). Furthermore, research indicates that how students consider themselves as readers can affect the ways they approach text and their eagerness to become actively involved in the reading task (McCarthey, 2002). The need for more training in effective reading strategies requires instruction which focuses on increasing students' abilities to select appropriate strategies for various study tasks (Archambeault, 1992) and emphasizes how students should extract textual information.

Students need to interact actively with text in order to construct meaning. Brown, Palinscar, and Armbruster (1984) identified six fundamental activities related to successful reading comprehension: (a) understanding reading purposes, (b) activating schema, (c) giving attention to main ideas, (d) critical evaluation, (e) monitoring comprehension, and (d) drawing inferences. Readers cannot learn and recall everything in a text because of limited processing capacity and, therefore, some information more than others must be chosen by the reader for deeper encoding and elaboration (Baddeley, 1992).
One valuable learning strategy that improves comprehension and recall is awareness and use of top-level expository text structure. Expository text structure contains passage information that can be represented in a hierarchical arrangement of idea relationships (Patterson, 1988). The overall pattern of ideas is a passage's top-level structure (Meyer, 1984a, 1984b). Five kinds of top-level expository text structure, for example, are (a) simple listing, (b) ordered listing, (c) comparison or contrast, (d) cause/effect, and (e) problem/solution (Mason & Au, 1986; Vacca & Vacca, 1986). Sensitivity to text structure is positively associated with reading achievement (Hiebert, Englert, & Brennan, 1983), and the use of expository text top-level structure is an effective mnemonic for retrieval (Meyer, Brandt, & Bluth, 1980) that results in improved recall (Patterson, 1988). Readers who demonstrate expository text structure awareness use text structure to guide their encoding and retrieval of information from passages.

Many students, however, even at the ninth-grade level, do not apply top-level structure as a comprehension or recall of information strategy (Meyer et al., 1980). Teaching students to activate prior knowledge and to use the strategy of identifying and using text structure when reading informational text will facilitate improved comprehension and recall (Gould, 1987). Hickerson (1987) indicated that students' comprehension and recall of text information is facilitated by explicit instruction in recognizing text patterns of organization by analyzing idea relationships within text verbally. Through training students to identify and use text structure patterns for comprehension of content information, their knowledge of common top-level expository text patterns aids in their anticipation and verification of the structure of ideas and information (Reese, 1988).
Another learning strategy that aids comprehension and recall is textmarking, or the marking of key information in text. Traditionally, the three forms of textmarking include underlining, highlighting, and annotation. Annotation involves writing key concepts, important supporting details, and possible test questions in the text margins. Simpson and Nist (1990) advocated an operational definition of annotation that modified traditional textmarking strategies of highlighting or underlining. They suggested that students need teacher involvement and guidance in how to mark text, as opposed to simply being told to highlight or underline significant ideas. Through teacher modeling, students learn a comprehension strategy that combines the processes of paraphrasing, using text structure, and regulating comprehension. Simpson and Nist's operational definition of annotation included: (a) using text margins for noting examples, summaries, and enumerated multiple ideas (listings and sequences; causes and effects); (b) condensing key information into graphs or charts; (c) writing potential test questions; (d) using margins to mark ideas which were unclear or questionable; and (e) underlining or highlighting important words or phrases.

A third learning strategy that is strongly related to and enhances reading comprehension is vocabulary knowledge. While the relationship between reading comprehension and vocabulary is well established in the reading literature, the exact causal nature of the relationship remains unclear. Although some research suggests that students’ learning of vocabulary does not result in improved text comprehension (Beck & McKeown, 1991), studies overall have found that students with broad vocabularies receive higher scores on reading comprehension tests than students with smaller vocabularies (Dole, Sloan, & Trathen, 1995).
There does appear to be a largely reciprocal relationship between vocabulary knowledge and comprehension: vocabulary knowledge contributes to reading comprehension (Stanovich, 1986) and, in turn, reading experiences contribute to vocabulary growth (Cunningham & Stanovich, 1998). As for students with strong or weak skills, vocabulary knowledge is strongly correlated with the amount of reading they do (Cunningham & Stanovich). Furthermore, some studies have found that a variety of traditional vocabulary exercises increase vocabulary knowledge, but they do not improve reading comprehension (Stahl & Fairbanks, 1986). The importance of experience in word learning, therefore, must be the grounds for teachers to choose effective instructional approaches that help students grasp a deeper understanding of vocabulary, thus increasing their vocabulary knowledge and improving their reading comprehension as well.

The Problem and Its Significance

Essential to succeeding in school, in work, and in life, most individuals must be able to read informational text critically, such as expository text found in science, social studies, social sciences, news reports, encyclopedias, articles, and other informational sources (Reese, 1988). A widespread problem is, however, that our nation's schools have failed to develop strong informational reading and writing skills in many students (Applebee, Langer, Mullis, Latham, & Gentile, 1994; Daniels, 1990). Some scholars relate this lack of informational reading skill development to even larger problems in achievement (Duke, 2000). Research has shown a correlation between science achievement levels and the ability to read informational discourse, indicating that low scores in science achievement may be related to deficiencies in informational literacy skills (Bernhardt, Destino, Kamil, & Rodriguez-Munoz, 1995).
Acknowledging the multi-faceted problem of students comprehending expository text, this study focuses on three related and potentially rich elements that can relieve students’ inability to understand expository text in the content areas: (a) text structure, (b) annotation, and (c) vocabulary and method of vocabulary instruction. Unfortunately, for many students, the comprehension strategy of using text structure and annotation in the content areas is not addressed in the classroom, and the most effective methods of teaching vocabulary are not practiced frequently. These three components, “keys” for unlocking the “secret” of how to comprehend expository text and prepare for evaluations, often are not included in schools’ curricula. As a result, students across grade levels throughout the nation are kept at a great learning disadvantage. Neglecting to show students how to comprehend expository text information, and yet testing and grading them on that very information, is a serious flaw in our educational system and a practice that simply does not make sense. This very large red flag waving high should be of deep concern to all educators.

Beginning at the fourth-grade level, informational text becomes an important component in classroom instruction and learning in the form of content area textbooks (Armbruster, Anderson, & Meyer, 1991). Tyson-Bernstein (1988) found that from about fourth grade on, textbooks play an increasingly significant role for learning in the content areas. Although these students are required to comprehend and work with expository material, most are not familiar with the barrage of specifically organized information and technical vocabulary that is introduced in the content area texts. Furthermore, many times they are unaware of the various forms of expository text structure, the connective words and phrases related to each structure, or the hierarchical arrangement of text information.
Comprehending and learning from expository text can be especially difficult and overwhelming for students who have difficulty selecting important information. Weak informational reading and writing skills may explain the fourth-grade slump in literacy achievement and progress across schools (Chall, Jacobs, & Baldwin, 1990; Sweet & Snow, 2003). Traditionally, this phenomenon has been explained as the result of the increase in demand for fourth-grade students to read and write expository text. More recent research revealed that this slump is greater among low socioeconomic status students who had received less pre-fourth-grade school experience with informational text (Duke, 2000). This work suggested that both the difficulty of informational text forms and insufficient school experience with informational texts must be considered factors attributing to students performing poorly with informational text (Duke).

Strategic instruction, a potentially effective or ineffective problematic field in itself, is at the core of promoting reading comprehension and learners’ self-regulation. Clearly, students need strategic instruction in how to identify the different types of text structure, discriminate between important and trivial information, organize the hierarchical information through annotation, and derive word meaning of new vocabulary. Without this vital instruction, guidance, and practice to help students develop strong schema for expository text, an all too common scenario for most students unfolds: (a) unfamiliar text structure and new vocabulary become barriers to reading comprehension, (b) interest in reading begins to wane, and (c) potentially positive and rewarding reading experiences dissolve into a tedious and disheartening struggle throughout the grade levels as they try to comprehend texts across the content areas.
Strategic instruction, beginning at the fourth-grade level, is needed critically to help young readers comprehend the expository material that is demanded of them. “The focus of strategy instruction is to improve how readers attack expository material, to become more deliberate and active in processing it” (Gersten, Fuchs, Williams, & Baker, 2001, p. 298). Explicit instruction is needed to help students develop a plan of action for understanding expository material that requires them to deal with less familiar content, to recognize more complicated structures, and to master the different text structures (Williams, 2000). A nation-wide fourth-grade slump is alarming, but it is not an enigma. We should regard these students’ understanding of expository text as if they are young novices in a different world, newcomers who must be shown what to do and how to do it, followed by abundant opportunities for practice until it is mastered.

Although much research exists on the effects of text structure instruction on reading comprehension improvement with students in fifth-grade and beyond, the problem in the present study focuses on a gap of literature which does not address if this method of instruction, combined with the strategy of annotation text marking, is effective with young children prior to fourth grade. More specifically, do young children have the developmental maturity and ability essential for learning and practicing text structure with annotation to better comprehend their expository textbooks?

**Purposes and Significance of the Study**

The purposes of this study were to determine (a) if the method of teaching text structure with annotation produced higher comprehension scores than the method of teaching vocabulary to pre-fourth-grade readers, (b) if the method of teaching text structure with annotation produced higher vocabulary scores than the method of teaching
vocabulary to pre-fourth-grade readers, (c) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension was the same for male and female students, and (d) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary was the same for male and female students.

The effects were measured by immediate posttest and follow-up test Normal Curve Equivalents (NCE) scores of the Stanford Diagnostic Reading Test, Fourth Edition (SDRT4), Forms J and K, containing the components of Comprehension and Vocabulary. NCEs are normalized standard scores with a mean of 50 and a standard deviation of 21.06.

The present study intends to expand the research concerning the effect of training in top-level expository text structure and the use of annotation textmarking on reading comprehension. Text structure and annotation are two individual reading strategies, each of which has been shown to improve reading comprehension. In the quest to improve students’ reading achievement, this study hypothesized that students will be empowered to read informational text by learning and using the combination of these two reading strategies.

This study also intends to expand the research on the effect of training in vocabulary development on reading comprehension. Since ancient times, there has been an interest in vocabulary development, and research concerning the strong relationship between vocabulary knowledge and reading ability has been clearly established since the early part of the 20th century (Thorndike, 1917). In the quest to identify strategic vocabulary instruction that helps students improve their reading comprehension, this
study focused on the findings of features for effective vocabulary instruction that aid reading comprehension. The comparison students were exposed to a wide variety of vocabulary strategies, thereby providing these children -- the above average, the average, and the below average achievers-- with a repertoire of skills that may increase their reading comprehension.

Because research on gender differences in educational achievement is of considerable interest to educators, this study also intends to expand the research regarding the effect of method of instruction (text structure versus vocabulary) on the reading comprehension of pre-fourth-grade male and female students. Gender differences in reading comprehension and vocabulary may provide information about and shed some light on male and female achievement performance. The findings may expand the research of gender differences in reading achievement, thereby contributing to a clearer picture of the relationship between the gender of young students and the reading skills of comprehension and vocabulary.

This study intentionally addressed the reading comprehension of pre-fourth-grade students. Many studies on text structure and annotation have been concerned with the reading comprehension of middle school, high school, and college level students. Because informational text becomes a significant element in classroom instruction and learning in the form of content area textbooks from about fourth grade on, the present study examined the effect of training the reading strategies of top-level expository text structure with annotation textmarking on reading comprehension of pre-fourth graders. Furthermore, this study examined the effect of vocabulary training and development at this grade level. Inherent in expository text is the growing presence of technical
vocabulary, new words that are specifically related to the topic of information. More specifically, this particular grade level was chosen because (a) the demands of comprehending expository text information begin at the fourth-grade level, and (b) many students at this grade level are novices at comprehending expository text; they may not resist using the new strategies of identifying text structure and annotating.

Research Questions

The following questions were examined:

1. Does the method of teaching expository text structure with annotation produce higher reading comprehension scores than the method of teaching vocabulary to pre-fourth graders, as measured by the SDRT4, Forms J and K, containing the components of Comprehension and Vocabulary?

2. Does the method of teaching expository text structure with annotation produce higher vocabulary scores than the method of teaching vocabulary to pre-fourth graders, as measured by the SDRT4?

3. To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension the same for male and female students?

4. To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary the same for male and female students?

Hypothesis

The research hypothesis underlying this study was that after three weeks of instruction, scores on the immediate posttest (Form K) and the follow-up test (Form J) on
the Comprehension component of the SDRT4 would be higher for the pre-fourth-grade students in the Text Structure Annotation (TSA) group than the pre-fourth graders in the Vocabulary Knowledge (VK) group.

As an additional analysis to the TSA and VK comprehension scores, vocabulary scores were collected and compared for the two groups. There was no hypothesis formulated or directed at this variable. In addition, there was no hypothesis specified for the potential differential effects of instruction for male and female students.

**Method**

The researcher conducted a summer reading program consisting of two independent 3-week sessions, the second session duplicating the first with different participants. There were two groups of students in each session, each group receiving one of two types of instruction: (a) training in recognizing six expository text structures through use of textbook annotation (TSA), or (b) training in vocabulary acquisition and development (VK).

The TSA group, pre-fourth-grade students receiving training in text structure through the use of textbook annotation, attended six 2-hour classes over a 3-week period of time. Five classes involved instruction, practice, and activities; the posttest was given in the last class in each session. Annotation of six expository text structures was modeled, discussed, practiced with instruction, and used independently by the students. To make these reading strategies more relevant and meaningful to the participants, excerpts from the students' fourth-grade science and social studies texts were used for application and practice.
The VK group, pre-fourth graders receiving training in vocabulary knowledge, were given an equivalent amount of time of instruction, modeling, and practice in using vocabulary acquisition strategies for word learning and reading comprehension skills. The posttest was taken in the last class of each session. To make the vocabulary acquisition strategies more relevant and meaningful to the participants, the science and social studies texts’ excerpts used for application and practice were the same excerpts as those used with the TSA group.

Posttest and follow-up test results of the Comprehension component score of the Text Structure Annotation group were compared to those of the Vocabulary Knowledge group to determine: (a) if teaching text structure with annotation produced higher comprehension scores than teaching vocabulary, and (b) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension was the same for male and female students.

Definitions of Terms

Key Variables

Independent and Dependent Variables. The independent variable in this study was type of instruction that included two conditions: (a) training in top-level expository text structure through the use of annotation textmarking, and (b) training in vocabulary acquisition and development. The dependent variable (DV) was the students' performance on the Comprehension component of the SDRT4, Form K (immediate posttest) and Form J (follow-up test). It was assumed that a statistically significant measurable difference would occur between the reading comprehension of pre-fourth-grade students in the TSA group, as compared to the reading comprehension of pre-
fourth-grade students in the VK group, as measured by performance on the Comprehension component of the SDRT4, Form K (immediate posttest) and Form J (follow-up test).

Key Terms

**Annotation.** Annotation is a form of textmarking that involves making marginal notes in the text and selectively underlining key concepts, supporting details, and potential test items (Frazier, 1993; Nist, 1987). Used as a learning strategy to aid comprehension and memory, annotation positively affects test performance (Nist & Simpson, 1988). This study incorporated an operational definition of annotation advocated by Simpson and Nist (1990) that included: (a) using text margins for noting examples, summaries, and enumerated multiple ideas; (b) condensing key concepts into graphs or charts; (c) writing potential test questions; (d) marking ideas which are confusing or questionable; and (e) underlining or highlighting key words or phrases.

**Cognitive Processes Involved in Learning From Text.** According to Mayer (1989), three basic processes are involved in meaningful learning from text: (a) selecting, (b) organizing, and (c) integrating information. *Selecting* is attending to the relevant information based on the learning task. *Organizing* is the arrangement of units of information into a coherent mental structure. *Integrating* refers to linking the text information to information internal to the reader.

**Contextually Relevant Vocabulary Development.** In this word study strategy used within the content area subjects, students relate unfamiliar words to other words that share the same elements and etymology. This strategy is also referred to a morphemic analysis, in which a word’s meaning is discovered by examining its morphemes, or
meaningful parts. As opposed to learning new words by looking up the definitions in the dictionary, students connect and learn new word meanings by clustering words related by Greek and Latin prefixes, roots, and suffixes. Hennings (2000) suggested seven principles for making this word study strategy a natural part of ongoing studies across the curriculum. These principles are discussed in Chapter Two, Review of the Literature.

Direct Vocabulary Instruction. In order for students to be able to understand new words in the content areas, some words must be taught explicitly. Unfortunately, if these words are rarely used and spoken, their meanings will be forgotten. Five key strategies for teachers to use in explicit vocabulary instruction were suggested by Kibby (1995): (a) teach words in advance of reading, (b) devote much planning time to avoid floundering for terms, descriptions, and definitions of words for students, (c) move from known words to unfamiliar words, (d) use a variety of methods in teaching word concepts, and (e) frequently use the new words in oral and written contexts.

Explicit Instruction. Explicit instruction of a comprehension strategy involves four phases: (a) teacher modeling, (b) guided practice, (c) independent practice reinforced by feedback, and (d) application of the strategy in real reading situations (Pearson & Doyle, 1987).

Expository Text. Expository text is informational text that appears in the content area subjects such as science, social studies, social sciences, articles, news reports, and reference books such as encyclopedias. Expository text is different than literature text that contains story elements of settings, characters, plots, climaxes, and themes (Mason & Au, 1986).
Gender Differences and Academic Achievement. It is generally accepted among researchers and educators that there are biological, hereditary, and environmental factors contributing to sex differences in academic achievement. Various research has focused on the following areas of gender differences and achievement: (a) academic attainment by gender, (b) causes of achievement differences, (c) developmental differences in academic behaviors, (d) the influence of classroom environment on gender and academic achievement, (e) performance related to task characteristics, (f) differences in reading attitudes and study activities, (g) hemispheric brain preferences, (h) physiological and social differences, and (i) academic disciplines where gender differences are found and not found (Buteyn, 1989).

Inexplicit Vocabulary Instruction. In the review of research, inexplicit vocabulary instruction involves teaching students various strategies for independently unlocking word meanings, referred to as “learning to learn words” by Graves (1987, p. 166). Three of these instructional methods include (a) context clues; (b) the dictionary; and (c) prefixes, suffixes, and roots.

Informational Text. Informational text is text and context with many or all of these characteristics: (a) information about the natural or social world; (b) durable factual content; (c) timeless verb constructions; (d) generic noun constructions; (e) technical vocabulary; (f) classificatory and definitional material; (g) comparative/contrastive, problem/solution, cause/effect, or like text structures; (h) frequent repetition of the topical theme; and (i) graphical elements such as diagrams, indices, page numbers, and maps (Duke & Kays, 1998).
**Metacognition.** Metacognition is one's understanding of any cognitive processes (Reese, 1988). The term evolved in the middle 1970s (Reese), and much reading research has been focused on metacognitive skills and reading for meaning (Baker & Brown, 1984). Brown (1980) proposed two significant factors involved in defining the role of metacognition in reading: (a) awareness of one's own cognitive process and (b) one's knowledge of cognitive resources and use of self-regulation tools such as planning, monitoring, and evaluating one's strategy use.

**Schema-Theoretic View of Reading Comprehension.** This view of reading comprehension explains the comprehension of text as an active construction of meaning from text (Anderson & Pearson, 1984). Schemata, mental networks of prior knowledge and experiences, aid the reader in acquiring and in retrieving information (Rumelhart, 1980). Text structure knowledge, or the knowledge of different types of text, can be applied by the reader during the process of comprehension (Voss & Bisanz, 1985). For example, the text structure of literature may provide information about plot, setting, and characters, whereas expository text structure provides information presented in simple listings and ordered listings.

**Strategy Instruction.** Strategies must be taught so that students can deliberately use them to read and understand a wide variety of texts. Strategies may be taught explicitly when directions and explanations are specifically given, or implicitly when the teacher models the thinking process. Only one or two strategies should be introduced at a time, and the teacher must give ample opportunities for practice. Text structure, annotation, and vocabulary are three strategies that aid reading comprehension.
Strategic Learning. Strategic learning suggests that students possess a variety of effective strategies to choose from in order to complete tasks across different content areas (Pressley, 1995). More basically, it implies that students have effective strategies for reading textbooks and useful strategies for studying (Simpson & Nist, 2000). They use the strategies to organize, elaborate on, and evaluate text as they control and self-regulate their learning (Paris, Wasik, & Turner, 1996).

Traditional Vocabulary Instruction. In this type of instruction that has justifiably fallen out of favor (Scott & Nagy, 1997), the typical vocabulary activities include: (a) copying definitions from a list of words from a dictionary, glossary, or worksheet; (b) writing sentences for each word; and (c) memorizing the spelling of words and their definitions. Other traditional vocabulary-learning activities include using the thesaurus for synonyms, placing the accent mark for pronunciation over the word being defined, and writing an antonym for each word.

Top-Level Structure of Expository Text. Top-level structure of expository text refers to the patterns of relationships among the ideas presented (Kletzien, 1992). In this study, the following six kinds of top-level expository text structures (Anderson & Armbruster, 1984; Mason & Au, 1986; Vacca & Vacca, 1986) will be used:

1. Definition/example includes words defined and examples that support and illustrate concepts.

2. Simple listing includes a listing of information about people, places, things, and events based on traits, descriptions, and characteristics. The order of the listing is not relevant.
3. **Ordered listing** refers to a procedure of events, a sequence of steps, time, and development.

4. **Comparison/contrast** identifies similarities or differences between two or more elements such as concepts, people, things, events, and places.

5. **Cause/effect** shows how things or events (effects) result from other things or events (causes).

6. **Problem/solution** is a cause/effect structure that includes the description of the problem(s) and the solution(s).

**Vocabulary Development.** Vocabulary is related to students’ reading achievement and is a specialized form of background building for reading comprehension. When students understand how a word relates to their background, they develop ownership of the word and really learn the word (Beck, 1984). Vocabulary development is the process of helping students develop ownership of words through teaching word meanings and other strategies such as (a) context clues; (b) semantic maps and vocabulary webs; (c) semantic feature analysis for synonyms and antonyms; (d) analogies; (e) homophones; (f) multiple literal meanings; (g) denotation and connotation; (h) figurative language; (i) homographs; (j) study of word histories and origins; (k) dictionary and thesaurus use; (l) crossword puzzles; (m) word banks and concept cards; and (n) prefixes, suffixes, and root words.

**Delimitations and Limitations**

**Delimitations**

The results of this study are generalizable only to the specific school setting and participants in the study. The sample consisted of 57 voluntary pre-fourth-grade students.
enrolled in 14 local private schools that were of moderate to high socioeconomic status. The study took place during the school summer vacation. A standardized measurement, the SDRT4, was used to enhance the generalizability of the study and to allow for extension of the results to similar populations of students in similar environments.

Limitations

Text Structure and Annotation. There are many factors specific to the training of text structure and annotation that may have a measurable effect on the outcome of this study. First, the content of the selected expository passages for practice in use of text structure with annotation to derive meaning may cause variation in effects. Students who had prior knowledge of the content may have comprehended the passages more efficiently and, therefore, may have recognized the author's structure more readily than students who were unfamiliar with the content topic. A schema-theoretic view of reading comprehension suggested by Anderson and Pearson (1984) described text comprehension as an active construction of meaning. The reader's schemata, the mental blueprint of experience and knowledge, interacts with text structure and content as the information is read and the meaning constructed. Prior knowledge about a reading passage assists the reader in acquiring and retrieving information (Rumelhart, 1980).

Second, the type of expository text structures used for practice with annotation may have caused variation in effects. Text structures differ in the amount of information about the relationship of ideas. For example, collection text structure does not provide the additional information about idea relationships which causation text provides (Meyer, 1979). Additionally, certain text structures are easier to recognize and improve recall than others (Kletzien, 1992). Richgels and McGee (1989) reported that students had less
difficulty recognizing and recalling the comparison text structure than the text structure of causation.

Third, the participants' limitations to the effectiveness of strategy training may have included weak decoding skills, automaticity, memory, and attention deficits (Rottman & Cross, 1990). Reading difficulty affects recognition of expository text structure (Armbruster, Anderson, & Ostertag, 1987). Students who have reading disabilities or who are struggling to read have common problems when trying to comprehend expository textbooks in the content areas. These problems include (a) weak decoding of the words and terms (Bender & Larkin, 2000), (b) inappropriate application of comprehension strategies (Lederer, 2000), (c) inefficient metacognitive skills (Bender, 2002), and (d) no comprehension of what they have read (Allington, 2001).

Furthermore, text structure recognition correlates with grade level that suggests a developmental aspect as indicated by the ability of more mature readers to perceive better and use this strategy (Englert & Hiebert, 1984; McGee, 1982; Taylor, 1980). Although the participants were students entering fourth grade, they varied in reading maturity. In the application of the annotation textmarking strategy, a student's ability to summarize and paraphrase is another factor that could affect variation.

**Vocabulary.** There are many factors specific to the training of vocabulary development that may have had a measurable effect on the outcome of this study. Many students have a limited vocabulary knowledge and ineffective strategies to learn new words. In this study, the pre-fourth-grade participants varied in vocabulary knowledge, with some encountering a new word but not relating it to other familiar words or to their personal background information. Also, some of the participants may have established
narrow boundaries in their search for word meaning clues (Harmon, 2002) and not fully understood the reading passages. The pre-fourth graders, differing in cultures and backgrounds, brought to the study the following key factors in reading comprehension: (a) different knowledge levels of words, (b) different abilities to access that knowledge effectively, and (c) different abilities to integrate new words into their existing schemata.

Duration of Instruction. Finally, the duration of instruction for both groups may have been a limitation to the study. Cronbach and Snow (1977) suggested that strategy instruction required a minimum of 10 class periods, yet the number of minutes in each period was not specified. As previously stated, the text structure and vocabulary reading strategy trainings were presented in two independent sessions with different participants. Each 3-week session consisted of six 2-hour classes for the TSA group and the VK group. In five classes, students received instruction, modeling, and participated in skill activities in a workshop setting. The TSA students received 10 hours of practice and application of text structure through the use of annotation, and the VK students received 10 hours of practice and application of vocabulary strategies. To reduce the threat of attrition, a limited 3-week period of instruction and practice was more suitable and practical for volunteer students during summer vacation months. Students, however, need much more practice to master new strategies (Garner, 1987).

Summary

Reading is a complex process. Reading informational text is essential to success in school and in life. The majority of reading in school after the primary grades involves expository text, as does most reading that adults find necessary to succeed in their occupations and daily living (Stanovich & Siegel, 1994). As our American society
becomes more technically advanced, the comprehension of expository text becomes increasingly important.

In the primary grades, stories are predominately used by teachers for reading instruction. Students are familiar with story structure (e.g., characters, plot, and setting) that aids their comprehension and memory. Upon entering fourth grade, however, students are required to comprehend expository, or instructional, text. For almost all students, comprehension of expository text is more difficult than comprehension of narrative text (Williams, 2000). Strategic processing of expository text presents less familiar content, more complicated structures, and the task of mastering the different text structures (Williams). Lack of informational reading skill development has been related to even larger deficiencies in achievement (Duke, 2000).

Studying textbooks to acquire information is a very difficult task for children, especially for those who are unfamiliar with various expository text structures that can hinder their comprehension (Bakken, Mastropieri, & Scruggs, 1997; Cook, 1983). It is necessary for students to interact actively with text in order to construct meaning and to be personally involved in the assignment by elaborately processing ideas and continually monitoring their understanding. Their comprehension depends on effectively selecting, organizing, and integrating text information that also entails deriving word meaning from unfamiliar content-specific vocabulary terms and phrases. Unfortunately, expository text is so dense with information and abundant with technical vocabulary that students must go through complex cognitive tasks to extract, summarize, and synthesize the content (Lapp, Flood, & Ranck-Buhr 1995).
To promote students’ comprehension of expository text, strategic instruction must be given. Because expository material is less familiar to students and it presents various types of text structures, explicit instruction in the use of multiple comprehension strategies is necessary (Gersten et al., 2001).

One effective strategy of organizing information from the text is to identify top-level expository text structure. Studies indicate that as students recognize text structure, they are able to identify important ideas and recall them better. Another effective reading strategy is annotation, a form of textmarking that is an efficient way to read and study large amounts of text. It serves the dual function of giving students immediate feedback about whether or not they understand the information at the time of the reading, as well as providing them with a written review for self-testing when they later prepare for comprehension evaluation.

A third strategy for comprehending expository text is vocabulary acquisition and development. The relationship between broad vocabulary knowledge and reading comprehension has been well established. Vocabulary knowledge is related to students’ reading achievement, and there appears to be a link or relationship between students’ reading comprehension and their vocabulary knowledge (Francis & Simpson, 2003). An essential ingredient of comprehension is knowing the meaning of words (Johnston, 1981). Students must be able to use a variety of vocabulary skills in order to develop their vocabularies and become independent learners in understanding word meanings.

The purposes of this study were to determine (a) if the method of teaching text structure with annotation produced higher comprehension scores than the method of teaching vocabulary to pre-fourth-grade readers, (b) if the method of teaching text
structure with annotation produced higher vocabulary scores than the method of teaching vocabulary to pre-fourth-grade readers, (c) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension was the same for male and female students, and (d) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary was the same for male and female students.

The effects were measured by immediate posttest and follow-up test NCE scores of the SDRT4, Forms J and K, containing the components of Comprehension and Vocabulary. NCEs (Normal Curve Equivalents) are normalized standard scores with a mean of 50 and a standard deviation of 21.06.

Overview

Chapter Two, Review of the Literature, supports the theoretical and empirical base for the research hypothesis stated in Chapter One. Five research areas are reviewed in the literature: (a) strategic instruction, (b) the knowledge and use of reading strategies by proficient and less proficient comprehenders, (c) awareness of top-level expository text structure on comprehension and recall, (d) the relationship of annotation textmarking strategy to expository text and reading comprehension, (e) the relationship of vocabulary development on reading comprehension, and (f) gender differences and academic achievement. A summary and synthesis contain the theoretical and empirical base for this study, followed by its intended contribution to research.

Chapter Three, Method, describes the methods used in the study which include the purposes of the study, the hypothesis, participants, design, curriculum and materials, procedures, and instruments to measure key variables. Chapter Three is followed by
Chapter Four, Results, which include the research design and analyses of the data. Chapter Five discusses a summary of the findings, conclusions and implications, limitations of the study, recommendations for future research, and contributions.
CHAPTER TWO
REVIEW OF THE LITERATURE

This chapter reviews the literature on the following topics and views that focus on strategies to improve reading comprehension: (a) strategic instruction, (b) the knowledge and use of reading strategies by proficient and less proficient comprehenders, (c) the effect of students' awareness of top-level expository text structure on comprehension and recall, (d) the relationship of annotation textmarking to expository text and reading comprehension, and (e) the relationship of vocabulary development on reading comprehension. Gender differences and reading achievement also will be discussed (see Appendix A).

Strategic Instruction

Much research has been conducted on strategies for reading and studying. Early studies in the 1960s, 1970s, and early 1980s focused on finding one superior study strategy or identifying which strategy was more effective for a specific task (Simpson & Nist, 2000). In the mid-1980s and 1990s, strategy research turned its focus on the effects of strategic instructional intervention on the performance of college students, and, in contrast to earlier studies where students were simply told to use a strategy, instruction included how the strategy worked and why it was important (Simpson & Nist).

According to Simpson and Nist (2000), the most important change in research on reading and studying strategies resulted from the development of the “cognitive
constructivist vision of learning” (Mayer, 1996, p. 364). In this theory, students were considered active learners and studies generally took place in more realistic educational settings such as classrooms. This approach advocated strategies that were necessary for college students to comprehend academic information (Mayer). In their analysis of cognitive constructivist studies over the last decade, Simpson and Nist identified the following five generalizations relevant to academic assistance programs which aim to develop strategic learning: (a) task understanding is critical to strategic learning, (b) beliefs about learning influence how students read and study, (c) quality instruction is essential, (d) the importance of teaching a variety of research-based strategies, and (e) cognitive and metacognitive processing should be the instructional focus.

Limitations to the effectiveness of strategy training exist, such as weak decoding skills, automaticity, and memory. Studies have shown, however, that poor comprehenders have been assisted considerably by strategy training (Rottman & Cross, 1990). Paris, Cross, and Lipson (1984) asserted that poor readers must be given instruction on how, when, and why to use different comprehension strategies if they are to become self-explicited, independent comprehenders. Meltzer (1994) maintained that helping these readers develop self-regulatory strategies must be addressed in explicit training.

**Strategic Instruction and Expository Text**

For almost all students, comprehension of narrative text is notably less difficult than comprehension of expository text (Williams, 2000). Story grammar, the basic text structure for narrative text, is familiar to most children even before they learn to read. Furthermore, their knowledge of how stories are structured is reinforced in the primary grades where teachers depend heavily on stories for reading instruction.
Characteristically, narrative prose has a pattern of beginning, middle, and end. This pattern helps children know what to look for and they can focus their attention on remembering what is being read (Bakken & Whedon, 2002).

Strategic instruction is critically needed to help students meet the demands of comprehending expository text. Expository text is more difficult than narrative text for at least four reasons. First, expository text introduces much unfamiliar information teeming with facts, theories, and dates (Cook, 1983). Second, expository text presents long passages without prompts from a conversational partner, a contrast to both narrative text that contains dialogue and to children's oral language experiences (Bereiter & Scardamalia, 1987). Third, the logical causal arguments inherent in expository text are more abstruse than the episodes and outcomes characterized in narratives (Stein & Trabasso, 1981). Fourth, expository text uses more complex, difficult, and varied structures than narratives (Kucan & Beck, 1997).

Strategic processing of expository text requires students to deal with less familiar content, to recognize more complicated structures, and to master the different text structures (Williams, 2000). Studying textbooks to acquire information, therefore, is a very difficult task for children, especially for those who are unfamiliar with various expository text structures that can hinder their comprehension (Bakken et al., 1997; Cook, 1983).

It must be warned that strategic instruction on how to comprehend expository text can be ineffective and even detrimental to student learning. Unfortunately, students are taught too many strategies in a short period of time and they are not provided sufficient opportunities for practice and transfer to different disciplines (Rhoder, 2002). Too
frequently, students in the content areas are given instruction that emphasizes delivery, collection, and regurgitation of information. As a result of this relatively inefficient approach, Herber (1984) warned that student readers “fail to perceive the overarching ideas, the significance of the information they have collected, or its usefulness” (p. 229).

Teachers must be aware that identifying main points and significant details is a skill that takes time to develop before students become knowledgeable in using different text structures. By introducing one text structure at a time, students can practice using the new strategy and eventually become skilled enough to begin monitoring their own competence. As advised by Simpson and Nist (1990), training students in the art of detecting and annotating text structure is a sequence of activities that includes:

(a) motivational activities, (b) explanation and reasoning of the strategy, (c) verbal modeling of the critical thinking processes, (d) guided practice and time for student questions, and (e) independent practice and written feedback.

To promote students' comprehension of expository text, teachers should analyze the structure of the text and teach students how to recognize and to use the existing organizational patterns (Alabama Reading Initiative, 2001). Bakken and Whedon (2002) emphasized that, "Because the structure of expository prose varies greatly from that of narrative prose, students need explicit training in strategies that teach them to identify different types of text structure and apply appropriate structure-specific strategies" (p. 230). Explicit instruction of a comprehension strategy involves four phases: teacher modeling, guided practice, independent practice and reinforced by feedback, and application of the strategy in real reading situations (Pearson & Dole, 1987).
Because of the complexity of expository text, strategic instruction should include the simultaneous use of multiple comprehension strategies and teacher modeling to show how students can transfer the strategies across the curriculum. Bakken and Whedon (2002) advocated an instructional sequence for teaching text structure to improve reading comprehension for children with mild disabilities. First, students must be taught how to recognize the different text structures. They are also taught a specific way to take notes about each type of structure and then study what they have written in their own words. Independent practice is required until each type of text structure is mastered. When another structure type is introduced, instruction is given for differentiating among the structural types. This includes the identification of passages and strategy application. Bakken and Whedon suggest the following steps for strategic instruction to comprehend expository material: (a) use an advanced organizer to discuss the purpose of structure and strategy, (b) model the thinking process by demonstrating how to recognize text structure in passages and how to use strategies through examples and nonexamples, (c) provide guided practice by going through examples, (d) allow adequate time for independent practice by having students try strategy use independently, and (e) do formulative evaluation by monitoring student progress frequently to assure students are successfully comprehending expository material.

Knowledge and Use of Reading Strategies
by Proficient and Less Proficient Comprehenders

Most researchers who have examined strategic processes used by readers to construct meaning from text have found that strategic learners possess a variety of strategies that can be applied selectively to a variety of tasks (Pressley, 1995).
Metacognition, one's understanding of any cognitive processes (Reese, 1988), plays a role in reading which Brown (1980) defines through two significant factors: (a) awareness of one's own cognitive process, and (b) one's knowledge of cognitive resources and use of self-regulation tools such as planning, monitoring, and evaluating one's strategy use. Expanding on this theory, Baker and Brown (1984) established two elements specifically related to metacognition and strategy use in reading: (a) knowledge of reading strategies which remains unchanged across tasks and contexts, and (b) regulation of reading strategies which depends on the reader, the goal, the reading task, and the context.

It is mistakenly believed by some educators that high school students have acquired critical learning strategies and can apply various strategies to specific tasks because they have been assigned homework, projects, and tests throughout their school years (Zimmerman, 1998). College freshmen, however, may find they do not have effective reading strategies that are essential for academic success. Many of these students are passive learners who rely on rote-level strategies, rather than on various mature strategies for reading and studying (Pressley, Yokoi, van Meter, van Etten, & Freeborn, 1997).

A growing body of literature suggests that less proficient comprehenders have limited knowledge about effective strategies (Wong, 1987) and that they have problems using strategies spontaneously when comprehending (Swicegood & Parsons, 1989). Most studies on strategy knowledge and use find that good readers use more strategies than poor readers (Hare & Pulliam, 1980). Older disabled readers characteristically lack an organized knowledge base in many domains (Lovett, Borden, Warren-Chaplin,
Numerous studies have reported that poor readers have limited comprehension of how the reading system functions, they are less aware of authors' different text structures, and they have difficulty judging texts for clarity, internal consistency, and relevance with what is already known (Armbruster et al., 1987).

According to Lovett et al. (1996), many poor readers have particular metacognitive insufficiencies and cannot develop or apply the comprehension strategies regularly used by good comprehenders. Poor readers frequently lack adequate knowledge of comprehension strategies and are unaware of when and how to use the knowledge they do have (Duffy, Roehler, Sivan, Rackliffe, Book, Meloth, Vavrus, Wesselman, Putnam, & Bassiri, 1987). These readers have been described as deficient strategy users because they lack efficiency, consistency, or appropriateness in their choice and use of specific strategies, or because they have not acquired many useful comprehension strategies (Chan, Cole, & Barfett, 1987).

Various studies have shown that strategic readers know when and why to use strategic behavior and they regulate different strategies for use in different reading tasks, while non-strategic readers may not be able to match appropriate strategies to specific reading tasks even if they know the strategies (Kletzien, 1992). One study that used an interview format revealed that good college readers knew more reading strategies than participants in an adult literacy program (Gambrell & Heathington, 1981). In another study that incorporated a think-aloud procedure at the high school level, Olshavsky (1976-1977) found that good readers used more strategies than poor readers. In a later study by Olshavsky (1978), however, results were contradictory, as there was no
difference in reading strategies used by good and poor tenth grade readers. Kletzien (1991) also compared proficient and less proficient high school readers' strategy use with comprehension passages of increasing difficulty. No difference was found between the two groups on easier levels, but the poor readers used fewer strategies as the difficulty of the reading task increased. Kletzien determined that the poor readers knew the same strategies as the good readers, but that they regulated the strategies less effectively.

Kletzien (1992) offered several explanations for contradictory results of studies with mature readers. First, the types of reading passages varied from one study to another. Some studies used narrative passages while other studies used expository passages; concrete passages were read by some participants, while more abstract passages were read by others. Second, information about strategy use was gathered differently. Methods included structural interviews, retrospective interviews, think-alouds, and cloze explanations. Third, the general intellectual ability of the participants was accounted for by only a few of the studies. Possibly some of the differences between good and poor readers could be contributed to their intellectual verbal ability. Perhaps a fourth confounding variable was that the good and poor readers were reading the same material in the majority of studies. Afflerbach and Johnston (1984) reported that readers' processing systems can overload and their comprehension processes can break down if they are reading extremely difficult material. Kletzien proposed that the difference in strategy use by proficient and less proficient readers in the previous studies resulted from the demands of the reading task that were more difficult for the less proficient readers.
Basic Types of Text Structure

Text structure refers to the pattern, or system of arrangement, of ideas presented in text and the type of the relationships connecting the ideas. The type of structure is determined by the author's purpose (Anderson & Armbruster, 1984). An extensive amount of research has focused on the importance of the effects of text structure on comprehension and recall (Meyer, 1975, 1984a). Meyer (1984a) identified five basic types of text structures: causation, comparison, collection, description, and response. Kletzien (1992) summarized these structures as follows:

The top-level structure of a causation passage shows a causal relationship between topics; a comparison passage shows similarities and differences; a collection passage is organized around a commonality such as time or space; a description passage presents attributes, specifics, explanations, or settings; and a response relationship may be organized around problems and solutions, questions and answers, or remarks and replies. (p. 193)

The five basic text structures by Meyer are similar to the five expository text structures identified by Mason and Au (1986) and Vacca and Vacca (1986). They differ slightly in that the collection and description structures by Meyer are included in simple listing text structure by the latter researchers. In addition, Meyer did not consider an ordered listing as a separate text structure, as did Mason and Au, and Vacca and Vacca (see Appendix B).
Anderson and Armbruster (1984) identified six expository text structures: (a) Description, (b) Temporal Sequence/Process, (c) Explanation, (d) Compare/contrast, (e) Definition and Examples, and (f) Problem/Solution (see Appendix C). In their analysis, the structure of content area text can be thought of in terms of “text units” and “text frames” (p. 195).

Regarding text units, the various types of text structures presented to the reader correspond to the author's basic purposes or questions. The types form the building blocks, or text units, of content area text. Each text unit is characterized by particular relationships that are commonly expressed in words and phrases. For example, commonly used words associated with the text unit Temporal Sequence/Process are first, before, after, next, and finally (see Appendix D).

Each generic concept in a discipline has a particular set of characteristics that relate to the discipline, and the text that informs the reader about a generic concept is referred to as a frame (Anderson & Armbruster, 1984). The text frame is similar to the text unit in that it provides information that answers a question. It differs from a text unit in that its structure is formed by the thought patterns that are typical of the content area represented in the text (Anderson & Armbruster). World geographers, for example, use and apply the concepts of land, climate, vegetation, resources, population growth and change, and cultural and political differences. According to Anderson and Armbruster, a text frame has “slots” (p. 200), or attributes, for a concept's associated features, each slot having a purpose or question linked to it.

Lunzer, Davies, and Greene (1980) identified and listed several science frames, the purpose of each, and questions related to each slot. One science textbook frame, for
example, is “Parts.” Its purpose is to describe and explain structure or parts, such as the structure or parts of a plant cell. Question slots in this frame would include naming the part, describing the part and its location, and explaining the function of the part (see Appendix E).

More recently, Bakken and Whedon (2002) suggested five expository text structures to be taught to children with mild disabilities, as well as text structure strategies that can be taught to improve students’ comprehension in the content area classes. The five text structures, somewhat similar to the structures previously discussed, include Main Idea, List, Order, Compare/Contrast, and Classification. Classification structure in a passage classifies or categorizes material into groups, while Main Idea structure focuses on a single topic with the other sentences supporting, clarifying, extending, or illustrating the main idea (Bakken and Whedon).

Other organizational patterns prevalent in content textbooks include introductory paragraphs, illustrations, and summaries (Alabama Reading Initiative, 2001). Introductory paragraphs give a preview of the information presented and may appear at the beginning of chapters, in margins, or in subsections. Illustrations aid the reader’s comprehension by using graphics or examples to clarify concepts. Summaries generally appear at the end of a section or chapter, and usually review and synthesize the major concepts and main ideas.

Multiple Strategies to Enhance the Use of Text Structure

Contributing to the problem of comprehending expository text, multiple effective strategies are needed to learn content area texts because this material is more difficult for virtually all students, especially for struggling readers (Saenz & Fuchs, 2002). Unlike
narrative text, instructional text contains less familiar content and presents more complex and varied structures. There are more consistent and significant gains in reading achievement when multiple strategies are taught (Tracey & Morrow, 2002), and teachers must empower learners to control their own learning. Identifying text structure is paramount in the comprehension of expository text. Powerful strategies that must be incorporated with the use of text structure include the combination of annotating, recognizing cue words, using spatial organizers, and generating test questions.

Annotation. Annotation is a form of textmarking that facilitates active learning through the interaction between the reader and the text, as opposed to memorization or rereading which promotes passive learning. It has been shown to be an efficient reading and studying strategy for comprehension of large amounts of text and transfer to outside courses (Mealey, Frazier, & Duchemin, 1990; Nist, 1987).

Reading assignments in college and high school usually involve entire chapters in textbooks-- each chapter typically more than 4,000 words in length-- and students need some strategy to determine which information should receive the most attention (Surber, 2001). While being taught relevant information in content area subjects, students need to be shown how to apply a modified operational usage of annotation that combines the various markings applied to text (Simpson & Nist, 1990). Given student training in annotation, this strategy has been shown to affect test performance positively (Nist & Simpson, 1988).

When students annotate the information presented to them in their textbooks, the study process has begun. For example, they must discriminate between the significant and trivial facts, find the sequence of events, and connect cause/effect and
problem/solution relationships. It is important to remember that most of the research on reading comprehension in the last thirty years has been conducted with short text passages that contain approximately 500 words (Surber, 2001). There is evidence that lengthy expository text, as opposed to short excerpts of the same text, can result in substantial differences in a reader’s attention and textmarkings. The relationship of annotation textmarking strategy to expository text and reading comprehension is discussed later in this chapter.

**Signal Words.** To generate content area lessons that combine the teaching of subject matter, as well as an understanding of how concepts and ideas connect, students also need instruction and modeling for recognizing signal words, or surface cue words, inherited in text structure. These signal words are purposely embedded in expository passages by authors to aid the reader comprehend the information, to recognize the types of text structure (e.g., problem and solution), and to organize and connect the ideas in a logical, meaningful way.

These signals, employed to bring attention to the structural organization and main ideas, include such devices as headings, typeface, preview and summary statements, rhetorical cues, semantic cues, repetition (Surber, 2001), and cue words that indicate the relational structure (e.g., *first, second, next*, and *as opposed to*). The identification and use of text signals to aid comprehension, a research interest for over thirty years, yields superior recall of main ideas (Lorch & Lorch, 1996). Cue words enhance recall by increasing accessibility of topic information and provide readers with a focused, better-remembered organizational structure that aids access to text ideas (Lorch & Lorch, 1995).
In a study by Meyer and Poon (2001), it was found that teachers must provide students with instruction about how to use text structure to aid recall in order for them to use cue words fully and appropriately. Harmon (2002) advised teachers how to provide students with alternatives to skipping unfamiliar words so that their understanding of text can be strengthened. In the use of context clues, teachers can help in the following ways:

1. Students must be made aware of the different kinds of clues because many readers do not take advantage of the clues within sentences. Likewise, context clues may not always give enough support to help the readers with unfamiliar word meanings (Schatz & Baldwin, 1986). Teachers need to ask questions that prompt students to consider other questions as they read. For example: (a) Is it describing something? (b) Does it show action? (c) Does it name something? (d) What kind of object is being described? and (e) What is the author trying to say about the object?

2. Students need to discover for themselves the many different types of context clues the authors have provided and they need to share these examples in discussions (Blachowicz & Fisher, 1996). Teachers need to provide numerous sources that give examples of contextual aids such as definitions, common expressions, modifying phrases, listings and sequences, setting and mood, comparisons and contrasts, synonyms, and cause and effect (Vacca & Vacca, 1998).

3. Many students, particularly poor readers, establish narrow boundaries in their search for signal cues, and they typically depend only on the sentence in which the word is found. Teachers should discuss how context clues can be located in other places in the passages, such as in the previous or following paragraphs, pages, or chapters.
4. Students should be encouraged to make mental bridges with the clues they find and their ideas about the unknown word. Teachers need to explain that these connections can be made with their background knowledge, events in the chapters, facts in the passages, immediate story events, the author’s use of the word, and reasons why the author chose that particular word.

Annotating signal words that are steadfastly predominate in expository passages helps students keep track of the hierarchical organization of significant facts and the relationship of content ideas. When they identify text structure, summarize and write questions in the textbook margins, enumerate listings and sequences, underline main ideas and significant facts, circle and highlight definitions, and mark the context clues, their comprehension skills have been fueled and already launched.

**Spatial Organizers.** Most human beings are typically visually oriented, and the retention of information given in visual form usually exceeds the retention of information delivered verbally (Levie & Lentz, 1982). To help enhance the use of text structure when comprehending expository text, teachers must also model spatial organizing strategies such as concept maps, webs, diagrams, graphs, charts, and outlines.

Spatial, or visual, organizers help students elaborate and process text by giving them a different perspective of how new vocabulary words are related to familiar ones, and how content ideas can be reorganized to construct meaning. The various forms of spatial organizers enhance and reinforce reading comprehension by requiring the reader to create concrete representations of significant related concepts. These visuals are very effective strategies for comprehending, remembering, and retrieving information.
(Rhoder, 2002), and teachers need to incorporate them within the content areas to help develop the comprehension skills of mindful readers.

Once students have the ability to identify text structure and annotate the significant information, that information can be reorganized through graphic organizers, maps, charts, frames, and webs. Readers become more focused on the text structure because they use the structure, spacial words, and vocabulary terms to map the information in the text. Visual organizers in the form of webs and maps provide a network for students to develop memory for school information; the more connections they can make between ideas, the more readily the information can be retrieved (Friend, 2000). Visuals used for summarizations and generalizations are more effective than rehearsal study methods (e.g., file cards) that may strengthen individual ideas but not create connections between ideas (Ruddle & Boyle, 1989).

Mapping is a useful, visual strategy in applying schema theory in the classroom while teaching students about text structure. Peresich, Meadows, and Sinatra (1990) proposed that teachers should model the thinking processes while constructing an informal network on the blackboard, whiteboard, or overhead projector prior to reading so that students can understand the connection between the ideas they will read about and their background knowledge about a topic. By arranging the concept words and connecting them with lines, new and familiar vocabulary words can be related in a meaningful, visual structure. Also, whole-class use of the mapping activity demands that students actively interpret their background knowledge and experience, or schema, while aiding them in the retention and recall of text information (Davidson, 1982).
Hennings (1991) suggested that before reading a selection, teachers should ask students to briefly study the title, introductory paragraph, major headings, illustrations, and concluding paragraph. This activity should be followed by students predicting the topic, brainstorming related words, and then webbing the words to highlight relationships. As the next step, students should predict the author’s points and kinds of information that will be found and add these words to expand the web.

In a study by Boyle (1996) that examined the effects of a cognitive mapping strategy with middle school students, two thirds of the students had learning disabilities and one third were mildly mentally retarded. Each step of the mapping procedure began with a letter used as mnemonic to aid the reader’s memory. Students first applied the mapping strategy to reading material that was below their grade level and then later to instructional material. Students who received the cognitive mapping strategy outperformed the control group.

Graphs and charts are other visual aids that reinforce the learning of text structure, emphasize the value of organization, and demonstrate to students that they can control their learning and memory. “The ability to read, interpret, and construct graphic displays is of growing importance in an increasingly visual world as students interact more with computers and electronic texts which often rely on graphic interfaces and visual aids” (Rakes, Rakes, & Smith, 1995, p. 46). Teachers can help students create different types of charts and graphs with as little as two or three pieces of information that summarize specific data in the text, and these visuals can be compared for interval-type information commonly found in social studies or science texts (Rakes et al.). After graphs have been
constructed, students should analyze, draw conclusions, generate questions, and make assumptions about them.

When giving strategic instruction on how to organize the content area information into maps, webs, graphs, and charts, teachers should model and give students practice with short text paragraphs at first. Longer paragraphs with varied text structures may be given later when students are more skilled at summarizing and generalizing the information into concrete visual relationships. As suggested by Rhoder (2002), the paragraphs should be ones that are familiar topics to the students so that they can focus on the strategy and not the topic.

Generating Questions. Self-questioning is a metacognitive strategy that students can use before, during, and after reading to improve their reading comprehension. “Self-questioning directs the learner’s attention to critical aspects of the text, thereby increasing understanding of important textual elements” (Nolan, 1991, p. 133). Nolan advocated the following steps in the instruction and practice of using the self-questioning strategy: (a) teacher discusses the concept of a main idea; (b) teacher and students read a passage, then teacher identifies the main idea; (c) students read a passage and identify the main idea, then teacher gives corrective feedback and asks students for other examples and ideas; (d) students read two more passages and identify the main ideas, then teacher gives corrective feedback; (e) upon mastery of the concept of a main idea, students then receive self-questioning training (those who are not 80% or more accurate in identifying main ideas in the five passages receive additional training and practice until they reach this criterion level); (f) teacher discusses how a main idea can be transformed into a question,
and models how a question can be formulated (followed by examples and feedback); and
(g) students write down questions and answer them.

Many studies have demonstrated the effectiveness of self-questioning. In a study with middle school students, it was determined that their reading comprehension improved after they were trained to regulate their understanding of significant textual elements through the use of summarizing and self-questioning (Wong, Wong, Perry, & Sawatsky, 1986). In an earlier study, Wong and Jones (1982) examined the effects of a self-questioning strategy with eighth- and ninth-grade students with learning disabilities. After the students were shown how to find the main idea, they were randomly assigned to a control group and self-questioning group. A five-stage procedure was used with the latter group: (a) identify the purpose of the passage, (b) find and underline main ideas, (c) think of a question for each main idea, (d) answer the questions, and (e) review the questions and answers. A variety of passages were given in two 2-hour training sessions, after which students in both groups were given passages to study for four days. The trained students answered more questions correctly, although they did not score higher on retelling the content of the passages.

The ability to understand expository text may be related to the complexity of the text structure, as well as the reader’s capacity for using text structure to generate questions (Wilson & Rupley, 1997). When students generate their own questions based on the material read, the manipulation of the information into the form of questions promotes active processing of the material by the reader. Questions that begin with Why? encourage students to activate their prior knowledge and experience in order to connect the facts and better understand them (Menke & Pressley, 1994). Beck’s research (1997)
involved teaching students to be more reflective as they used combined multiple strategies when they read. Students were “taught to paraphrase occasionally, to predict and see if their predictions are validated by the material in the text, to ask themselves questions as they read, to stop and reread if something is unclear, and to learn to ask for help” (Gersten et al., 2001).

Hennings (1991) advocated that students use self-questioning during reading and after reading, rather than waiting until the end of the selection. To help engage students in self-questioning, teachers must “mind talk” (p. 351) or model the thought processes when asking questions during and after they read. During the reading process, students continuously interact with the main ideas when they question what the author is trying to say, when they look for clues that provide hints as to what the author is conveying, when they compare their anticipated main point to the actual point, and when they ask themselves if the author changed or expanded the main point as the selection develops. Hennings explained,

Reflecting in this way while reading rather than waiting until the end of the selection turns readers into constructors—they use their evolving ideas to make decisions about which facts to concentrate on, which sentences and paragraphs to reread, and which words, sentences, and paragraphs to skip. (p. 348)

After reading the selection, students clarify the main ideas by going back to the relevant details that support the main point or points. This involves choosing additional facts and examples that relate to the main point. Students may ask themselves if they completely or partially agree or disagree with the ideas, why they agree or disagree, and what facts support their opinion.
Self-questioning and prediction are two effective strategies that, in the past, have been taught as single techniques. Prediction demands understanding about what is being read so that the reader can anticipate what might happen next. “Prediction provides a purpose for reading because readers anticipate coming events in the passage. Motivation is increased by the anticipation of discovering whether one’s hypothesis will be confirmed” (Nolan, 1991, p. 133). In a study by Nolan in which the two strategies were combined in a single intervention, results indicated that students who used both strategies scored higher in reading comprehension than those who used only self-questioning or one other strategy. Nolan suggested that instruction and modeling of predicting what the author might discuss in the next section of the text should be given in the following stages: (a) teacher discusses with students the benefits of predicting what the author might present in the next passage; (b) after reading a passage the teacher models a possible prediction; (c) teacher asks the students for other possible predictions and gives corrective feedback; (d) students are asked to read a passage and formulate a prediction, and teacher gives corrective feedback; (e) students are asked to read two passages and formulate their predictions, and teacher gives corrective feedback; and (f) if needed, students are given additional practice with prediction.

Nolan (1991) found that poor comprehenders who used the combined strategy of self-questioning and prediction scored higher in reading comprehension that those who used either strategy alone. The strategy is effective because it forces poor comprehenders to monitor the events in the passage more actively in an attempt to seek out answers to their questions, as well as to discover if their predictions will be confirmed. Furthermore, students continued to use the strategy in the content areas and made positive comments
regarding the application of the strategy to classroom material. The results of Nolan’s study are consistent with the findings by Palincsar and Brown (1986). In their earlier study, seventh-grade students were trained to use the skills of summarizing, clarifying, and predicting. They showed gains in their summarization skills and they were able to continue using these strategies in their social studies and science classes.

Ideally, while being taught relevant information found in expository texts, students must be shown how to combine the use of text structure with the other strategies. In this researcher’s preference of method of instruction and teacher modeling, students would use a combined self-questioning and prediction strategy throughout the reading process as they: (a) preview the title, author, major headings, first and last paragraphs, and illustrations; (b) anticipate the topic and main ideas, and brainstorm words for webbing; (c) identify the text structures, and annotate main ideas, vocabulary terms, cue words, and important facts; (d) expand their webs and create graphic organizers for concrete organization of thought; (e) summarize orally and in writing; (f) discuss how main ideas and significant information could be changed into questions; and (g) write the questions and answers, and discuss them. Using some or all of the students’ questions on quizzes and tests can encourage active student involvement, as well as reinforce the value and benefits of applying this self-questioning strategy effectively.

Effects of Text Structure on Comprehension and Recall

Research concerning the effects of text structure on comprehension and recall suggests a developmental aspect as indicated by the ability of more mature readers to perceive and use this strategy more efficiently. In a study by Englert and Hiebert (1984), for example, sixth-grade readers were more aware of text structure than third-grade
readers. The same effects were found by McGee (1982) with third- and fifth-grade readers and by Taylor (1980) with adults, sixth-grade, and fourth-grade readers. It was also found in these three studies that text structure recognition correlates with reading ability, as well as with grade level. Good readers in Grades 3 through 6 recognized text structure more than poor readers in the same grades.

Some research indicates that certain text structures are easier to recognize and improve recall than others (Kletzien, 1992). In a study by Richgels and McGee (1989) for example, fifth- and sixth-graders were given instruction in using comparison and causation structures. Students had less difficulty recognizing and recalling the comparison structure than the structure of causation. Furthermore, the degree of text difficulty possibly affects text strategy usage. Kletzien (1991) found that strong and weak readers used the strategy of text structure more frequently on passages of intermediate difficulty.

Other studies indicate that recognition of text structure helps in the identification and recall of significant ideas, and that instruction given to students in how to use this strategy has had positive effects on comprehension and recall. Meyer, Brandt, and Bluth (1980) found that students who were aware of text structure tended to chunk, or organize, the information as they read it. The chunks retold by the proficient readers to the examiners indicated the type of text structures they used to organize the content. Their retellings were extremely different than the retellings of the less proficient readers (Meyer, Brandt, & Bluth). Furthermore, an abundance of research indicates that students who use text structure as a reading strategy ask themselves relevant questions about the material being read (Gersten et al., 2001).
In a study by Armbruster, Anderson, and Ostertag (1987), fifth-graders who were trained to recognize and summarize problem/solution texts showed improvement in comprehension of problem/solution and summary writing of these structures over students who were not given instruction. Bartlett (1979) found that ninth-graders who were trained to recognize four expository text structures identified text structure more readily and recalled more information from the texts. After training 131 young and old adults how to use text structure as an aid for reading comprehension, Meyer and Poon (2001) found that the structure strategy: (a) increased the amount of information recalled from the text, (b) increased the amount of important information remembered, (c) improved the organization of recall by readers changing from a list type of strategy to one more like top-level structure organization, and (d) increased readers’ consistency in applying text structure strategy with multiple texts.

Kletzien's Study. Kletzien (1992) conducted a study that minimized the confounding factors of intellectual verbal ability and task difficulty by choosing twenty-four 10- and 11-grade participants with similar ability, and by revising passages so that the level of difficulty was relatively the same for the proficient and less proficient readers. Because the difficulty of material affects what strategies readers use (Afflerbach & Johnston, 1984; Kletzien, 1991), the passages were simplified by altering the sentence structure and vocabulary for the less proficient readers. Twelve content words in each passage were omitted and replaced by blanks (the same words were omitted in the original and simplified passages). Readers filled in the cloze blanks and were asked how they determined the meaning of the passage. This provided the opportunity to examine
strategy use when comprehension was interrupted. Interviews were tape-recorded and transcribed, and responses were categorized by using a strategy classification scheme.

Results indicated that all participants demonstrated some knowledge of many strategies, yet they used the same strategies repeatedly for all the passages. The readers mainly relied on vocabulary, inferences, previous knowledge, and rereading. Other studies have reported this same pattern of participants relying upon only a few strategies over and over again, even though they are aware of other strategies (Bednar, 1987; Kletzien, 1991).

Results also indicated that the proficient and less proficient comprehenders used the same types and number of strategies for all passages when they were reading passages of the same relative difficulty, and that they used more strategy types on the causation passage than on the collection passage. Meyer (1979) emphasized that collection text structure does not provide the additional information about the relationship of ideas which causation text provides for the reader. Furthermore, proficient readers used text structure on the causation text more than on the other two passages, and they often paraphrased sections of the passage instead of rewriting the original phrasing as the less proficient readers did.

Kletzien stated that her study is limited by having used only three passages and that passages about different topics could change strategy use. She suggested that future research should measure previous topic knowledge so that the interactions between prior knowledge, text structure, and strategy use could be explored.
Exposing Children in Primary Grades to Informational Text

Textbooks are at the heart of the curriculum, but unfortunately, students at the elementary and secondary levels have little knowledge of the common expository text structures that are embedded in the content area text passages. Generally, expository text authors use text structure to convey the main idea and important supporting details, the very information often chosen by teachers for tests and other evaluations. Recent studies suggest that both the difficulty of informational text forms and insufficient experience with informational text contribute to students performing poorly with informational text (Duke, 2000).

Students in the early grades typically develop strong schemas of the literary structure of narrative texts, such as the setting, the characters, and the plot presented in chapters of a story. When the nature of the text changes to reading for information, however, students’ schemas are underdeveloped and unprepared for the varied structures of expository text. The familiar story elements of setting, plot, and characters have been replaced by expository text structures containing main ideas, definitions, examples, listings, ordered listings, contrasts and comparisons, and problems and solutions. Rather abruptly in their school lives, young students are required to read and comprehend information presented to them in a different and unfamiliar way.

Exposing students to reading and writing informational, or instructional text, particularly in the early grades, has been a prevalent response by researchers to students' informational illiteracy (Duke, 2000). Scholars advocate exposing children in the early grades, pre-fourth graders, to reading and writing informational text for the following advantageous reasons: (a) experience with informational text will ease difficulties with
these skills in later schooling (Duke); (b) informational texts can motivate children to read (Caswell & Duke, 1998); (c) young children enjoy interacting with and can become deeply engaged with informational text (Duke); (d) activities with informational text, such as determining truth value, provide valuable experiences for children (Duke; Kamil & Lane, 1997); (e) children learn to read for important information (Kamil & Lane); and (f) informational text form can be the stimulus for overall literacy development (Caswell & Duke).

Although there is debate whether or not young children can learn from text forms other than narration, a growth of research suggests that young children can learn from informational texts when given the experience (Duke & Kays, 1998). Providing young children experiences with informational text can prepare them for informational reading and writing that will be required of them in later schooling. Children need ample exposure to and experience with informational texts before knowledge of that genre is developed fully enough for them to read and write informational text successfully (Duke, 2000).

In addition to preparing young students for reading and writing instructional text later in school and in life, there are other advantages to exposing young children to informational texts. Exposure to informational texts in the early grades can motivate children to read, particularly those who do not find narrative and other forms of text as interesting (Caswell & Duke, 1998). Boys and girls enjoy interrelating with and can become deeply involved with informational text (Guillaume, 1998). For some children, these text forms can be the stimulus for overall literacy development (Caswell & Duke).
Activities that incorporate informational text also provide valuable experiences for children. An activity such as listening to a fantasy story and then listening to an informational book based on the same subject, along with teacher-led discussions of what is real and what is not, is one example (Duke, 2000). Kamil and Lane (1997) stressed that determining the truth value of text and learning to read for important information are two important reasons to expose young children to informational text.

In summary, students are expected to read, comprehend, and answer questions based on the information read. These studies point out that readers who are aware of and use the strategy of text structure are better able to comprehend and recall text information. Recognition and use of expository text structure, therefore, is a most valuable reading strategy.

The Relationship of Annotation Textmarking Strategy to Expository Text and Reading Comprehension

Textmarking, the noting and marking of important information in texts, is a strategic learning strategy that can aid reading comprehension and recall, thus promoting independent reading of whole and diverse text across the content areas. Annotation, or textmarking, of expository text facilitates more active, as opposed to passive, learning of informational text because it involves writing key concepts, relevant details, and potential test questions in the text margins. Nist, Simpson, and Olejnik (1985) compared college students' study strategies of annotating and underlining, recitation, vocabulary, test planning, and lecture note format and content. It was found that annotating and underlining was more highly correlated with test performance than the other strategies. In a similar study, college developmental students chose annotation when given a choice of
test preparation strategies (Nist, Simpson, Olejnik, & Mealey, 1991). Other studies show that annotation is a favorite strategy among strategy learning students (Mealey et al., 1990; Nist, 1987).

**Organizing Informational Text: Text Structure and Annotation**

Informational text has been a focus of reading research, specifically in the area of structure and interrelationships of the ideas within a text or passage (Reese, 1988). Contributing factors to students having difficulty in comprehending and learning from expository text include motivational, situational, and cognitive aspects. Motivational and situational aspects are beyond the scope of this research proposal.

Concerning cognitive processes involved in meaningful learning from text, Mayer (1989) suggested that meaningful learning depends on three basic processes: (a) selecting, (b) organizing, and (c) integrating information. Selecting involves noting the text information and focusing on information that pertains to the goals or task demands of the learning situation. Organizing involves arranging the selected information into a mental structure that logically connects text ideas and builds internal connections. Integrating involves linking the selected information with existing cognitive structures and builds external connections.

One way of organizing information from the text is to use the author's organization, referred to as top-level structure. Studies examining the effects of top-level expository text structure on comprehension indicate that when students recognize text structure, they are better able to identify important ideas and recall them (Taylor & Samuels, 1983). Students who have knowledge of common top-level expository text structures may recognize and apply the structure of the ideas and information in the text.
passages for anticipating, encoding, and retrieving passage content more strategically and effectively (Reese, 1988). The combination of using text structure with annotation can enhance students’ comprehension as they underline main ideas and supporting facts, mark important terms, enumerate listings and sequences, write brief summaries in the margins, and generate written questions by changing the section headings into what, who, why, how, and when questions.

Kletzien and Bednar (1988) observed that readers have difficulty comprehending text because they have no personal investment in the reading task. Annotation of expository text can increase motivation and encourage readers to have a personal investment in the reading task. Nist (1987) identified two major reasons why annotation is a powerful active learning strategy for identifying and using expository text structure to construct meaning. First, selective textmarking, a strategy that focuses on and includes active processing of significant information in the text, requires cognitive demands on the student and prompts deeper levels of processing. DiVesta and Gray (1972) advocated that the act of annotation itself promotes comprehension of text. Second, selective textmarking provides a self-testing method to study for evaluations (Miller, Galanter, and Pribram (1960).

Annotation for comprehension of expository text, therefore, accomplishes two learning tasks simultaneously. The first task is the isolation of significant ideas determined at the time of initial reading (Frazier, 1993). Through the active involvement of noting related ideas, paraphrasing and summarizing in text margins, and enumerating listings and sequences within passages, students receive immediate feedback as to whether or not they understand the information. Concerning the second task, the study
time required for evaluation of text comprehension, the act of deciding what specific text information was or was not important has already been accomplished. Students' study time, therefore, is spent reviewing and testing themselves on their annotations, both essential aspects of recitation and learning (Simpson & Nist, 1990).

Nist (1987) clarified two significant reasons why an active study strategy like annotating is effective. First, selective textmarking requires deeper levels of cognitive processing (DiVesta and Gray, 1972). In other words, the act of using a strategy that demands active processing of significant text information seems to enhance learning. When students annotate they receive immediate feedback about whether or not they understand the information (Simpson & Nist, 1990) and, therefore, they are continually monitoring their learning. Second, quality textmarking provides a self-testing tool to study for exams. Textmarked information serves as an external mechanism when it is used to review and prepare for a test.

In their review of research on textmarking strategies, Simpson and Nist (1990) found that most commercial college reading materials suggested underlining or highlighting text information, and that other studies asked participants to underline text, highlight text, or use research generated underlinings. No studies promoted annotation in the form of briefly paraphrasing key ideas in the text margins. They concluded from this literature review that participants in most studies were told by researchers to mark their texts, but little, if any, training or guidance was given in learning how to mark the text.

To facilitate more active learning, the present study will follow the modified textmarking strategy of annotation developed by Simpson and Nist (1990) that involves the processes of paraphrasing, using text structure, and monitoring comprehension. As
students annotate they (a) write brief summaries in the text margins, (b) enumerate multiple ideas (e.g., causes, effects, descriptions, orders of events) in an organized fashion, (c) note examples of concepts by writing EX in the margin, (d) put key information from the text on graphs and charts when appropriate, (e) write possible test questions, (f) note unclear ideas with a question mark in the margin, and (g) selectively underline key words or phrases. Once students successfully utilize these seven basic processes, they will be encouraged to add to these processes their own personalized coding system. For example, in a study by Simpson and Nist, one student used the symbol TQ to note a potential test question in the text paragraph.

Main Ideas. Within a paragraph are groups of sentences that state some idea about the topic, and all those ideas support or contribute to the overall main idea of a paragraph. A topic can be summed up in one word, but a main idea must be clearly stated in a full sentence. The main idea sentence, stated or inferred, umbrellas all the other sentences in the paragraph.

The process of identifying and underlining or highlighting main ideas in expository text is not a simple task for students. They must relate the text information to what they already know, make connections between important details in the text, make inferences that extend past the details explicitly stated, and either accept or reject the major points they have generated (Hennings, 1991). In many classrooms, students are given practice in finding main ideas in paragraphs taken out of context. Many of these paragraphs have been written for the very purpose of helping students find the main idea. These clear-cut text structures may help students at first, but the paragraphs are not typical of paragraphs usually found in the content areas.
In many reading and language arts books in elementary school through college, directions typically are given for students to find the main idea at the beginning, middle, or end of the paragraph. The texts explain that if the main idea is not stated, then students are to write an inferred main idea. Furthermore, students are often asked to choose the correct main idea on multiple-choice test formats, a far cry from identifying main ideas in authentic continuous text. The metacognitive self-awareness thought processes behind choosing the main idea are given little attention. Students rarely develop a reading strategy for understanding main ideas that they can apply in the content areas in school or naturally in life (Hennings, 1991).

A study by Aikman and O’Hear (1997) questioned whether main idea statements actually have been used by real authors in the past, or whether main idea statements appeared predominately in reading skills texts. They examined usage and placement of main ideas used by prominent 19th-century U. S. authors in their nonfiction writings that included essays, books, chapters from scientific writings and social sciences, and printed texts of orations and discussions. Their research clearly determined that main idea statements were used by a variety of 19th-century American writers and that they all used main ideas in predictable positions which are commonly found today in expository textbooks. Furthermore, the main idea was placed in the first sentence by the authors 83.9% of the time. Aikman and O’Hear acknowledged that the use of main ideas has been a major factor of successful writing throughout the years, indicating that it likely will continue to be a reading and writing phenomenon in the future.

Types of Annotation Problems. Students in the upper elementary grades through college level have difficulty annotating expository text. Simpson and Nist (1990)
identified consistent types of problems college freshmen have when first learning to annotate: (a) students annotate excessively, referred to as the *medieval monk syndrome*; (b) students annotate too little, or *nothin' here syndrome*; and (c) students cannot clearly state key ideas, or *rest of the story syndrome*. Simpson and Nist offered practical teaching suggestions for each of these types of students. Students who fall into the medieval monk syndrome need practice in paraphrasing and summarizing in their own words, as well as practice in omitting unnecessary words. They often complain that an instructor is trying to trick them on a test, when in fact, they are usually describing an instructor who rewords text concepts. They need to realize that key information is not explicitly quoted usually from text to test.

Helping students who are the nothin' here type can be more challenging. Some students annotate very little because they don't care to use the strategy, perhaps the reason being that they prefer to use their own method of studying. It is likely that these students passed tests in high school with little or no textbook reading. They need to be shown what college-level tasks entail via, as for example, samples of old tests in various courses. Another possibility that explains why these students rarely annotate is that they may be passive rather than active readers. These students read text information but fail to note key words and cues; they read and completely overlook the passage's basic structure. Simpson and Nist (1990) suggested the following activities to help these students:

(a) discussion of how authors develop and embellish ideas when they write;
(b) examination of a variety of textbook excerpts that are "organized around assumptions, characteristics, theories, causes/effects, trends, likenesses and differences, and functions and locations" (p.128); (c) instruction in cuing systems for these writing
patterns; and (d) much practice with expository text. Research by Simpson and Nist indicates that the nothin' here syndrome students gradually move to the medieval monk syndrome stage where they then need help with paraphrasing and omitting unnecessary words.

Students with rest of the story syndrome behavior usually find the topic of a selection but have difficulty stating the complete idea. They sometimes understand the author's main idea, but choose to not write the key concept in the margin in order to save time. These students believe that rereading the text for important ideas should be done at a later time before the test. Other students simply cannot state key ideas. As suggested by Simpson and Nist (1990), help for these students includes: (a) explanation of how annotating in the text's margins in the initial reading saves time; time spent in rereading could be spent on testing one's self; (b) a rubric to help students move to clearer, specific thinking; and (c) saturated practice in active reading of expository text.

Supporting the findings of Nist and Kirby (1989), Frazier (1993) noted that college developmental reading students generally displayed strong resistance to annotation. Even after they were trained in annotation and instructed to apply the strategy to a biology text, they annotated very little. Consistent with Anderson and Armbruster's (1984) findings, Frazier also found that these students preferred more passive strategies such as memorizing, rereading, and looking over text information. Simpson and Nist (1990) stressed that, regardless of the content area or the student's age, teachers giving instruction in annotation should consider the following:

1. Allow enough time to master a new strategy (Garner, 1987). In the study by Simpson and Nist, students were given direct instruction for nine 50-minute periods and
worked independently for a minimum of three hours. How the time is spent is the key to helping students achieve success. Teachers need to model the annotation strategy, interact with students, and receive immediate feedback on their instruction, as opposed to having students simply complete a series of assignments in workbooks.

2. Use various content area texts to teach the hows, whys, and whats of a strategy. Simpson and Nist used three different content areas to show students that annotation is a strategy that can be used with different tasks and modified according to the content. History, for example, may emphasize cause and effect text structure, while science may provide multiple simple listings and ordered listings abundantly. Students need exposure to realistic practice activities.

3. Discuss the benefits of using the strategy with students who use less effective strategies, as well as with students who use effective ones. The more strategies available to a student, the more equipped the student is for the various tasks and demands in learning. Remind them that any new strategy is awkward initially, but that with practice, it will require less effort.

4. Provide students immediate feedback on their attempts to use the new strategy. With time, encourage them to become evaluators of their own work using, as for example, a checklist that evaluates strategies.

Inconsistent findings concerning active versus passive learning strategies are due, in part, to studies that fail to provide sufficient training in strategies or fail to allow adequate time for strategy practice (Frazier, 1993). When training emphasizes practice, feedback, and review, the textmarking strategy of annotation is supported by both
The Relationship of Vocabulary Development and Reading Comprehension

Since the early part of the 20th century the strong relationship between vocabulary and reading ability has been known (Thorndike, 1917), yet the exact nature of the connection is evasive and problematic. Vocabulary is a significant factor in students’ abilities to understand text, and it is possible that vocabulary knowledge may help increase reading comprehension (Hall, 2004). Various studies on vocabulary instruction have determined that when reading comprehension was improved as a result of preteaching vocabulary, vocabulary knowledge was a major factor influencing reading ability (Beck, Perfetti, & McKeown, 1982). Since the mid-70s, researchers have attributed vocabulary knowledge for being the single most important factor in reading comprehension (Ryder & Medo, 1993). It is reasonable to assume that the more difficult the vocabulary and the more words with which students are unfamiliar, the more likely it is that the readers’ comprehension will suffer. Expository texts are abundant with technical vocabulary specific to the content area, but they do not always give enough background information to help students understand the unfamiliar words and make sense of new information (Beck, McKeown, Sinatra, & Loxterman, 1991).

Helping students learn new words is variously referred to among educators as *teaching meaning vocabulary, word meaning instruction, concept development, and vocabulary instruction*. Learning words accomplishes four major educational goals for students because it (a) increases their perception and conception of the world, (b) helps
them organize new things into a schema, which may require them to reorganize and
refine associations, (c) promotes their abilities to connect print and oral communication
of words, and (d) assists their abilities to use appropriate words (Kibby, 1995). According
to Blachowicz and Fisher (2000), students’ ability to know more words when completing
a reading comprehension test is closely related to high scores on a vocabulary test.

Vocabulary Knowledge and Reading Achievement

Comprehension depends on the readers’ prior knowledge of the topic, as well as
their familiarity with the terminology and vocabulary presented in the text (Bos &
Anders, 1990). As Daneman stated, “Words are the building blocks of connected text”
(1988, p. 150). Students with poor vocabularies, therefore, have problems understanding
what they read because they have fewer “building blocks” to help them comprehend.

Four hypotheses that may clarify the relationship between reading comprehension
and vocabulary have been proposed by Mezynski (1983). The aptitude hypothesis claims
that the relationship between reading comprehension and vocabulary rests on the reader’s
verbal ability, and that this aptitude is relatively unchangeable. The instrumental
hypothesis purports that understanding individual word meanings is the most important
factor related to reading comprehension. In this view, explicit instruction in word
meanings would directly increase reading comprehension. The access hypothesis assumes
that vocabulary knowledge is related to the reader’s ability to derive word meanings and
use them in processing text. Emphasis in instruction would be placed on automatic
decoding and generating definitions through systematic practice. The knowledge
hypothesis asserts that vocabulary words are written representations of concepts in the
reader’s blueprint of knowledge. In teaching vocabulary, instruction would be based on underlying concepts and their relationships.

It appears that students’ beliefs about vocabulary knowledge and acquisition are not related to their reading achievement. They may score high on a standardized reading achievement test, but they may not be able to describe what it means to know a word or how they acquire vocabulary knowledge (Harmon, 1998). Numerous studies have found that students who know many words are more likely to be more efficient readers than those with limited vocabulary. They are more competent in decoding words and recognizing new words in elementary school. Because they are competent readers in the middle grades, their vocabulary acquisition is directed more on meaning than recognition (Chall, 1987), and therefore, they better comprehend text information.

From then on, children learn new words for known concepts and new words for known concepts and new words for new concepts in various content areas and in more sophisticated literature books. The need for a rich vocabulary base becomes even more important during the ensuing middle and secondary years. (Harmon, 1998b, p. 518)

Results from previous research studies indicated that high-reading achievement students score higher than low-reading achievement students on tests of vocabulary knowledge. In a recent study by Francis and Simpson (2003), analysis indicated a moderate correlation between college students’ reading achievement scores and scores on the Vocabulary Task portion of the Nelson-Denny Reading Test. This correlation supported the hypothesis that there is a relationship between students’ vocabulary test scores and their ability to know words when completing a reading comprehension test
(Blachowicz & Fisher, 2000). It has been established that students’ reading comprehension can excel when unfamiliar words in a text are replaced by familiar ones, as well as when meanings of difficult vocabulary are taught through the use of synonyms or short definitions (Kame’enui, Carnine, & Freschi, 1982). Studies by McKeown, Beck, Omanson, and Pople (1985) reported that teaching specific words can improve the comprehension of the texts containing the words, but instruction must take place often to effect gains in comprehension.

It is generally accepted that the ability to read words is a thorny contributor to the problem of comprehending expository text. Informational material is characterized by the increasingly presence of new words, particularly technical vocabulary which is specific to the content areas. Becker (1977) found that even for second grade competent readers who could decode fluently, the vocabulary levels in their school texts in third and fourth grade left them unable to comprehend the material accurately. For struggling students, these unfamiliar, often multi-syllable words are even more difficult to decode and pronounce—words that become frustrating blockades to reading comprehension in the effort to derive word meaning. When too much attention has to be given to low-level processes such as word recognition, there are not enough mental resources to attend to the higher-order processing involved in comprehension (LaBerge & Samuels, 1974). This lack of word analysis ability is also related to a lack of interest in unknown words encountered in or out of school (Ruddell & Shearer, 2002).

**Vocabulary Development.** In the last twenty years there has been much debate about the size and rate of vocabulary development and how it is acquired (Anglin, 1993).
Students encounter over 100,000 words in their reading in school (Anderson & Nagy, 1992). According to Graves (2000), students’ reading vocabulary grows by approximately 3,000 to 5,000 words per year, or about 25,000 words by the end of eighth grade and over 50,000 by the end of twelfth grade. Anglin’s monograph estimated vocabulary growth clearly distinguished between (a) root words that must be learned, (b) derived words that are variations of root words, (c) inflected endings, and (d) compound words. Anglin reported that root word vocabulary grows from about 3,100 root words in first grade to about 7,500 root words in fifth grade.

In a more recent study involving 108 children in Grades kindergarten, 1, 2, 4, and 5 from three schools, Biemiller and Slonim (2001) estimated that in the normative population, “…children had acquired about 5,200 root words by the end of Grade 2, or about 2.2 words per day from 1 year of age. During Grades 3 to 5, children …gained an average 3,200 additional roots, or about 2.9 words per day” (p. 508).

For every word a child learns, we estimate that there are an average of one to three additional related words that should also be understandable to the child, the exact number depending on how well the child is able to utilize context and morphology to induce meanings. (Nagy & Anderson, 1984, p. 304)

Words are a series of written letters that mean one or more things. Research has focused on the unclear issue of what it means to know a word. Dale (1965, p. 898) suggested that vocabulary knowledge consists of four stages that extend from having no knowledge of a word to the ability to use and remember the word. The four progressive stages include:
1. “I never saw the word before.” Examples of such words would be *bittles* plentular, or *fadular*. They do not exist as meaningful words.

2. “I know there is such a word but I don’t know what it means.” Examples of these words would be *hugger-mugger, adit*, or *serendipity*.

3. “A twilight zone-- a vague contextual placing of the word.” For example, you *bask* in the sun, but can you *bask* in the shade? What does the word specifically mean?

4. We pin down the word. We would recognize it again and probably remember it. We know the word.

Researchers disagree about the exact nature of these stages, or continuum, yet it is widely accepted that with each advancing stage, students have acquired more knowledge about a word and should have the ability to partake in more difficult and advanced level tasks that involve the word (Nist & Olejnik, 1995). “With each year of schooling, texts take on a larger role of instruction, and factors that may inhibit comprehension of these texts, such as the lack of vocabulary knowledge, can be expected to have increasingly detrimental effects on achievement” (Jenkins, Matlock, & Slocum, 1989, p. 217). According to Nagy, Herman, & Anderson (1985), *knowing a word* is learning the meaning of words through an incremental process that happens on different occasions and in various context, although children can gain partial knowledge of a word’s meaning with having only one exposure to the word. Partial knowledge of a word, as Dale (1965) previously suggested, is not knowing a word.

From various studies it appears that students of all grade levels have difficulty with generating sentences with new vocabulary words, even when they are provided with dictionary definitions of the words. Elementary students, as well as college students, have
trouble creating sentences for words they are unfamiliar with, even with adequate dictionary definitions provided, a finding which supports the point that multiple exposures to words over a long period of time is vital to really know a word (Nist & Olejnik, 1995).

Laflamme (1997) developed for his study a *Multiple Exposure Vocabulary Method*, an experimental procedure based on seven principles of vocabulary development and five phases of instruction. Results indicated that “…vocabulary instruction must be formalized, structured, and related in a meaningful way to the content that students are learning. It also implies that analyzing and studying shorter passages enhance comprehension” (p. 379). Laflamme’s five sequential phases of instruction include:

1. *Presentation of worksheet.* The teacher hands out a list of words from a specific reading. For words marked C or R, students make educated guesses based on context or structural analysis of a word. For words marked D, they find appropriate dictionary definitions.

2. *Verification of worksheet.* For the first worksheet of the year, the teacher discusses the definitions for all words on the list. Students check their definitions and make corrections if needed. For subsequent worksheets, the teacher discusses words marked C or R only. In small groups, students compare definitions of D words. The teacher asks questions about discrepancies relating to D words. Students make necessary changes.

3. *Reading assignment.* The teacher assigns a reading selection along with a written post reading activity which students complete.
4. **Reinforcement activities.** The teacher chooses vocabulary activities that students will complete: vocabulary cards, verbal analogies, situational maps, semantic matrices, sound clues, matching exercise containing examples of words without definitions, or word categories.

5. **Testing.** The teacher prepares one quiz for every 40 to 50 words encountered on worksheets. Student review lists and activities in preparation for quiz. The teacher prepares a major test with questions requiring students to apply the definition and not just memorize the words. Students review lists and activities for the test.

Laflamme (1997) proposed the following seven principles of vocabulary development: (a) Teacher enthusiasm- teachers convey their belief in the effectiveness of learning strategies; (b) Direct instruction- techniques of procedures come from teacher initiative and direction; (c) Integration- new information connects to previous knowledge and experiences; (d) Intensive practice- frequent activities develop facility with words and understanding of how they are used; (e) Repetition- there is frequent exposure to the same words through practice exercises or testing; (f) Learner involvement- the learner locates definitions, applies them to various situations appropriately, and practices deep processing; and (g) Long term commitment- vocabulary development is an integral part of the curriculum.

The vocabulary, reading, and writing activities in this instructional approach gave teachers a concrete and systematic model arranged to improve verbal abilities while covering the course content. Laflamme (1997) pointed out,

The vocabulary and reading/writing strategies espoused in this study represent a yearlong commitment by teacher and students to improve specific verbal abilities.
The students studied the relationship between words, sentences, and ideas in manageable units. Class discussions enhanced their understanding through the production of their own examples of specific styles. Test wisdom developed as a byproduct of the procedures, but the development of verbal abilities remained the core. (p. 380)

**Vocabulary Instruction**

Philosophically, instruction in vocabulary knowledge and acquisition is based on the belief that there is a relationship between vocabulary development and reading comprehension (Blachowicz & Fisher, 2000). The method of vocabulary instruction is pivotal in the relationship between word knowledge and reading achievement. After examining teachers’ manuals for guidelines for teaching vocabulary, Ryder and Graves (1994) concluded that teachers need more effective resources for teaching vocabulary and that the methodology of teaching vocabulary needed to be improved. Some reading researchers believe that vocabulary is the single most important factor in reading comprehension (Ryder & Medo, 1993).

There are differing views on how reading comprehension can be improved through certain types of vocabulary instruction: (a) traditional repetition for learning new vocabulary definitions; (b) pre-teaching the vocabulary (Beck et al., 1982); (c) using semantic strategies that present new words with examples, webs, synonyms, and other information; or (d) mnemonic, or memory-enhancing, strategies.

While the debate persists on the optimal method for giving instruction for vocabulary learning, some studies have shown that the effects of pre-teaching unfamiliar vocabulary to increase comprehension were negligible (Pikulski, 1989). Because prior
knowledge and experiences have an impact on the amount of ease in which students learn, Kibby (1995) suggested a model that hierarchically orders a vast spectrum of the different relations between prior knowledge of something and prior knowledge of its word. In teaching vocabulary, this model would be used to help match instructional methods to the difficulty of the word and the thing to be learned.

Vocabulary instruction should include helping students appreciate and enjoy learning new words (Baumann & Kameenui, 1991) that must be preceded by students understanding and seeing the value of word learning (Graves, 1987). According to Nilsen and Nilsen (2002), one principal to help teachers teach vocabulary lessons is that children “are more likely to learn new words when they are feeling playfully engaged rather than when they are feeling threatened and worried” with unfamiliar words about which they feel uncomfortable pronouncing (p. 255).

Greenwood, Joiner, and Huff-Benkoski (2003) encouraged teachers to provide students enjoyable opportunities to experience word analogies, comparisons between two distinct domains of knowledge. Analogies challenge students to connect the unknown to the known by transferring knowledge from a familiar to unfamiliar domain (Harrison & Treagust, 1993). In studies of analogy skills and comprehension of expository text, the relationship and transfer of children’s verbal analogy skills to drawing inferences and comprehending exist, but they remain unclear. Nevertheless, the findings are consistent regarding the usefulness of word analogies: (a) they can be applied across the curriculum to put new concepts into familiar terms; (b) they are a tool for developing inductive and deductive reasoning, thinking in sentence patterns, and enhancing vocabulary; (c) they require that students observe specific details, use multiple meanings for context, explain
their reasoning, and draw conclusions; and (d) they extend school knowledge to real-life situations (Greenwood et al.).

In order to help less fluent readers learn new words and, hence, improve their reading comprehension, Francis and Simpson (2003) suggested two modifications for teaching vocabulary. One approach is to engage students in a variety of meaningful oral expression activities. Students, particularly those who are not fluent readers, need these activities to help them learn new words and improve their reading comprehension (Francis & Simpson). Prior to written exercises, instruction should promote class discussions of new words’ definitions, characteristics (connotations, nuances, origins), synonyms, antonyms, and homonyms. Students share sentences using the new words, an exercise which gives the opportunity to hear the words in many sentence examples.

A second modification is to design activities that promote students’ deeper levels of understanding. Generating meaningful sentences, for example, can be a difficult task for both fluent and less fluent readers. Vocabulary instruction should engage students in active written and oral activities that encourage students to think and use the new words beyond the definitional level. Francis and Simpson caution teachers not to rely on most commercial materials that are matching and multiple-choice format. Instead, they suggest activities such as learning words from different types of texts, using question-asking activities, devising self-evaluation vocabulary checklists (Nist & Simpson, 2001), creating words maps and concept cards, and practicing the cognitive process of exclusion (discriminating between, negating, and recognizing examples and no examples).

Direct instruction is an important facet of vocabulary acquisition and development, a form of background development needed for reading comprehension. The
primary goals of instruction should include: (a) helping students develop a bank of words they can instantly recognize and understand, thus better ensuring fluency in reading, and (b) teaching students how to independently determine the meanings of new words (Cooper, 1986). While it is agreed among many educators that vocabulary instruction is needed to improve comprehension, the most effective method of instruction deserves scrutiny. The traditional approach of having students look up words in the dictionary for meanings or complete vocabulary exercises has been shown to improve vocabulary knowledge but not reading comprehension (Stahl & Fairbanks, 1986). There are various approaches to teaching vocabulary in an effort to increase reading comprehension of expository text. As later discussed, current research points to several features of effective vocabulary instruction which teachers need to integrate in the learning of the content areas.

As with the learning strategy of identifying text structure, this researcher advocates that strategic instruction involve the use of visuals (e.g., transparencies and overhead projector) for modeling the annotation strategy of identifying new words and their meanings. For example, a technical vocabulary word (in bold print or not) that is introduced as a definition in the textbook can be annotated by circling or boxing in the word, highlighting the definition, and writing def or DEF in the margin adjacent to the new word. Annotating new vocabulary words brings the reader’s attention to the word within the content of the passage, and it provides a coding system that later will aid in study time and in the task of recitation (Simpson & Nist, 1990). To further reinforce using multiple strategies for vocabulary to improve reading comprehension, graphic organizers, such word maps, can be drawn to concretely show the relationships between
new words and familiar ones. Webs can illustrate the connection of the new word to whole concept ideas within the paragraph and chapter sections.

A review of the literature indicates that independent word learning strategies tend to fall into three major categories: using context, analyzing word structure, and using the dictionary (Graves, Juel, & Graves, 1998). Nagy and Anderson (1984) stress that if students have the skills to infer word meanings by using context clues and analyzing word structure, they will be empowered to expand their reading vocabulary significantly. It must be cautioned, however, that teaching morphemic and contextual analysis strategies may increase vocabulary knowledge but not necessarily improve reading comprehension.

A combination of using context clues, analyzing word parts, and using the dictionary for vocabulary instruction is recommended by Graves et al. and described in the following steps: (a) teach students to find context clues within words, headings, phrases, sentences, and paragraphs; (b) help them think about what the clues mean; and (c) encourage them to predict a meaning. In addition, instruction included teacher modeling, abundant practice, reminders to use context, and opportunities to read more complex text. Direct instruction encompassed prefix meanings, word parts fitting in the context of a sentence, dictionary definitions, and other word learning strategies as students read. In order to enhance reading comprehension, vocabulary development programs must have multiple facets that provide learning experiences with wide independent reading, and rich instruction in specific vocabulary related to text concepts, as well as in transferable vocabulary strategies such as contextual and morphemic analysis (Nagy, 1988).
Learning Words Through Context. Learning words is an intricate task that takes place in many different settings. The settings range from incidental acquisitions in speaking and writing to direct, explicit instruction. According to Nagy and Anderson (1984), a student in the middle grades and beyond must acquire 3,000 new words each year in order to be ready for the reading demands of the next grade level. Based on this finding, it has been advocated by vocabulary experts that learning from context plays a major role in a student’s pregnant and still growing vocabulary portfolio. Incidental vocabulary acquisition from speaking and writing appears to happen incrementally over a long time period with multiple exposures to words (Nagy, 1988).

In the studies of vocabulary, there are arguments for and against the use of context clues as a way to derive meanings and improve vocabulary development. Some researchers such as Schatz and Baldwin (1986) suggest that context clues do not help word meaning regularly, even when students are shown how to use them. Nist and Olejnik (1995) concluded that many vocabulary studies use unnatural text and high frequency words, but that “students rarely will encounter natural text that provides the strong context contained in the material designed for these studies” (p. 175). Furthermore, students may have the ability to learn words from context, but chances are they rarely do (Jenkins et al., 1989). Deighton (1974), cautioned about the limitations of context clues because they: (a) reveal word meaning only infrequently, (b) reveal only part of the meaning of that word, (c) reveal only one meaning of a word, and (d) gradually allow for acquisition of new words. Furthermore, “limitations of context clues include dependence on prior knowledge, a clear-cut definition, and proximity to the unknown word” (Kibby, 1995, p. 219).
On the contrary, studies on reading improvement and chapters on vocabulary in content area texts are abundant with praise and instructional techniques for teaching context clues to students at all grade levels. Overall, the research appears to support the view that readers do learn the meanings of words through context (Sternberg, 1987). Slawson (1991) proposed that step-by-step instruction must emphasize and elaborate the processes and strategies needed for deriving word meanings from various contexts. Sternberg and Powell (1983) emphasized the importance of giving instruction in both specific context clues and strategies for identifying and using them. Sternberg (1987) stressed that students need to learn context skills that can be transferred to daily reading tasks, and that strategy instruction be given in three context units: sorting important from trivial information; combining the relevant information into an integrated whole; and relating new and known information.

Even though readers do learn the meanings of some words through normal reading activities, this process is not efficient or effective. “Research spanning several decades has failed to uncover strong evidence that word meanings are routinely acquired from context” (Beck & McKeown, 1991, p. 799). In a study by Jenkins, Stein, and Wysocki (1984), students learned word meanings after reading the word six to 10 times while reading connected text. If the definitions of the words were given first, the students learned the meanings of the words after just two encounters with the words. Students read sentences with key words, synonyms, and definitions of the key words, and then used the words in other sentences. Results showed that they acquired more synonyms and improved in sentence comprehension, indicators that practice was crucial to optimum reading comprehension.
Graves (1987) suggested a comprehensive approach for vocabulary instruction that integrates a variety of strategies for learning words, learning to learn words, and learning about words. His model plan for tackling unfamiliar words included eight steps: (a) recognize an unfamiliar word; (b) gauge the significance of the word to understanding the text; (c) try to infer the meaning from the preceding context; (d) try to infer the meaning from the next context; (e) reassess the importance of the word; (f) apply knowledge of morphemes, or word parts; (g) again assess the importance of the word; and (h) use the dictionary.

**Analyzing Word Structure.** An important factor to learning new words is having the ability to relate parts of the unfamiliar words (morphemes) to parts of words already known (Nilsen & Nilsen, 2002). When teaching the concept of morphology, students study morphemes, the smallest units of language that carry meaning, and thereby become more aware of how to figure out the meanings of unfamiliar words.

Morphemic analysis is the unlocking of a word’s meaning through using base words, prefixes, suffixes, inflected endings, and Greek and Latin roots. It appears that students above the fourth grade level can benefit from this instruction (Nagy, Diakidoy, & Anderson, 1993), although research remains inconclusive concerning the effects of teaching morphemic analysis on independent vocabulary learning and reading comprehension (Baumann, Edwards, Font, Kame’enui, & Olejnik, 2002).

More efficient vocabulary instruction includes extensive practice with words, definitional and contextual knowledge about words, and active student involvement leading to deep processing of the words. Educators should integrate word studies in lectures, discussions, and various school situations. For example, teachers should use
content area subjects as a context for introducing and reviewing prefix, root, and suffix meanings.

As previously mentioned, Baumann and Kameenui (1991) advised teachers that vocabulary instruction should include helping students appreciate and enjoy learning new words. The Harry Potter books, for example, are an excellent and enjoyable source for word study activities with students. Students are eager to learn new names of characters, animals, spells, and charms. According to Nilsen and Nilsen (2002), J. K. Rowling “empowers her readers by setting up situations and then creating the new words she needs through morphemes—some common and some not so common” (p. 255). Also, she creates her new words from familiar elements that empower her readers to connect the meanings of the new words with words they already know. She mixes and matches morphemes, a process that happens in natural languages more often than most of us recognize—and more often than we as teachers take advantage of when we present vocabulary lessons. (p. 255)

Teachers must provide ample opportunities for students to learn processes of language development and to acquire skills to draw the kinds of connections that will help their learning be more efficient. To help students connect unfamiliar concepts and related word labels with their background knowledge, Hennings (2000) suggested seven principals to guide teachers when teaching word studies:

1. *Highlight Greek and Latin roots, or bases, as students encounter them across the curriculum.* Many multi-syllable technical vocabulary words found in the content areas are built with elements derived from Greek or Latin words. These words can be kept in students’ word banks or listed on a bulletin board. While teaching the course
content, the teacher can choose the appropriate time to list and highlight the root of the word and encourage students to look for hints to the meaning of a Greek or Latin root in the word. This process will help students remember the terminology because they have focused on connections among words.

2. *Associate new terms derived from a root with more familiar ones that contain the same root and use visual means to highlight the common element.* English words come from the same Latin or Greek root. Words that are derived from a common base can be listed in a column, or tower chart, with the shared element in uppercase letters, a visual aid that can help students see the meaningful elements within words. A verb tower can help students understand word meanings and promote content area reading and learning (e.g., *trans MIT, sub MIT, per MIT, re MIT, o MIT, ad MIT,* and *com MIT*).

3. *Use content area studies as a context for introducing and reviewing meanings of prefixes, and include meanings of prefixes on word towers.* Prefixes play a major role in word meaning, and the study of spatial and temporal-indicating prefixes can help students distinguish among closely related terms. A noun tower can be a visual aid for students to understand the shared bases of words (e.g., *im MIGRANT*, and *e MIGRANT*).

4. *Give attention to prefixes that carry a negative message.* History texts are abundant with English multi-syllable words that rely on prefixes to add a negative message to their bases. Before students read the chapter, the teacher can distribute word cards to the students and have them sort the words into categories based on the structural elements. Students then predict the meanings of the words based on sentences in the chapter, generalize about the meanings, and create large charts that show the words and their prefix meanings.
5. Give attention to word elements that tell how great or how many. Content area texts contain words with prefixes that give information about size and number, particularly in mathematics and history. Students should be given the opportunity to sort word cards according to their number-designating elements. A Linguistic Link chart that lists prefixes, their meanings, and examples of words can be used as a visual aid to help students understand the complexities of multi-syllable words as they proceed through the chapters.

6. Help students to see the relationship among clusters of words formed from the same base but that carry different suffixes that affect the way the words work in a sentence. The addition of suffixes gives variation to a word that results in groups of very similar words that differ in their function in a sentence. With the addition of a suffix, a verb can become a noun or an adjective. A wheel of related words with the common base at the hub provides a visual aid for students to understand the complexities of multi-syllable words.

7. Help students to make meaning with suffix-like endings such as –cacy and –archy, which are commonly found on words important in content area reading and writing. Students need to know the importance of endings on words and how these endings can promote comprehension across the content areas. When they first encounter a new word, they should find its origin and meaning in an online or book dictionary. At that time, they might also find related words that make future reading easier. An etymology chart with suffixes, meanings, and word examples help students conquer a number of related words and facilitate comprehension.
These seven principals for word study instruction are based on the premise that students’ vocabulary and comprehension skills are strengthened when their learning of new words is embedded in content area course activities, not during isolated word study lessons. As opposed to memorizing individual terms and their definitions, they learn clusters of words through perceiving words in terms of elements that share a common origin.

**Dictionaries and Definitions.** Students typically view vocabulary learning at a definitional level, a quick and simple process of memorizing short one-word definitions. Nist and Simpson (2001) described these students as novices viewing vocabulary knowledge as the tip of an iceberg--what is above the water line is the obvious definition of the word. To really “own” a word means going to the hidden, deeper level of the iceberg, which means knowing synonyms, antonyms, figures of speech, analogies, and examples of usage in self-generated sentences.

Figurative language, for example, is encountered frequently in conversation and in writing. The popular metaphors, similes, idioms, and proverbs are embedded in our culture and they add humor and color in our language. While figurative language is abundantly used in oral language, many students struggle to interpret the expressions when they see them in text. The literal meanings of words found in the dictionary are of no use to the reader who is unable to interpret figurative language. This may result in a breakdown in text comprehension, frustration and discouragement in continuing the reading task, and a delay in later language development and literacy attainment (Nippold, 1998).
Definitions do play an important role in vocabulary learning and instruction, particularly with helping students understand the content-specific, or technical vocabulary, predominant in expository text such as in social studies and science. A typical activity in traditional vocabulary instruction, still popular in many schools, requires students to copy definitions for words from the dictionary or vocabulary terms in their textbooks. Generally, this activity is followed by the familiar task of generating a sentence for each word based on its definition. Most teachers still value the skills needed to use dictionaries as a reference tool, and it is routine practice to send students to the dictionaries when a word is unfamiliar or confusing to them (Scott & Butler, 1994). In the majority of schools, dictionaries are available in the classroom. Online dictionaries have the advantage of providing the definitions more quickly and easily, but in these dictionaries, the verbs and other predicates are more difficult to define (Gentner, 1981). A major concern for educators is that finding words and definitions in the dictionary can (a) divert students’ attention from the learning task, (b) interfere with short-term memory processing, and (c) subsequently disrupt the comprehension process (Gonzalez, 1999).

Although definitions are vital to comprehension, relatively little research explains what makes definitions effective and understandable to children. There are more studies, however, that have found the limitations of definitions and the difficulties that children have in using them (Scott & Nagy, 1997). One common finding is that children have trouble extracting information from definitions and generating sentences from definitions. In a study involving fifth-grade students writing sentences from definitions of unfamiliar words, McKeown (1993) found that 72% of the sentences were unacceptable. There is
sufficient research evidence that the practice of teaching definitions for new words is not reliable in increasing reading comprehension of the text (Stahl & Fairbanks, 1986).

Scott and Nagy (1997) suggested several possible sources of children’s difficulties with definitions:

1. Definitions require many difficult metacognitive tasks. Using a dictionary to comprehend a text containing a new word involves a series of subtasks, such as remembering the meaning of the text while sorting for the word and then choosing the appropriate definition from multiple meanings. In the same respect, creating a sentence based on the definition may be difficult because of the metacognitive demands of writing.

2. Definitions have remained unaltered since the first English dictionary was published in 1604 (Balmuth, 1984). Even though definitions can be accessed online, they are merely electronic versions of hard-copy dictionaries that still present unfamiliar language to children. “The language of definitions is in some sense an extreme version of literate language- even more decontextualized, more terse and more less like oral language than most of the written language to which children have been exposed” (Scott & Nagy, p. 187).

3. Students often seem to focus on only part of a definition, sometimes chosen at random. When children misinterpret or disregard the rest of the definition, they use the fragment as the meaning of the word being defined.

4. Children can generate unacceptable sentences for definitions because of simplistic substitution strategies (Miller & Gildea, 1987). Scott and Nagy (1997) explained,
...students find a familiar word or phrase in the definition of the new word, create a sentence using that word or phrase, and then substitute the new word in its place. Thus, the sentence My family erodes a lot was presumably generated when a student found eat out or eat away in the definition of erode. (p. 188)

Furthermore, McKeown (1993) and Nist and Olejnik (1995) analyzed dictionaries for their usefulness in improving students’ word acquisition and reading comprehension. They determined that most entries were so inconsiderate that students could not use the definitions to complete their reading tasks efficiently.

In light of these difficulties which students experience when using the dictionaries and definitions, great consideration must be given to helping them with scaffolding activities, such as mapping information in a definition to a new word. Teachers must be acutely aware that directing students to use dictionaries independently for extracting word meaning falls short of guaranteeing word understanding or comprehension of text.

**Vocabulary Testing**

Vocabulary testing is yet another area of research interest and study. Curtis (1987) stated that the method of testing vocabulary can provide much information about students’ level of vocabulary knowledge. Selecting a word’s definition on a multiple-choice task, for example, demands much less word knowledge than writing the word in a sentence.

Elshout-Mohr and van Daalen-Kapteijns (1987) classified vocabulary tests into three categories depending on the different tasks in which students are required to do: (a) reproduction, (b) skill-in-action, and (c) process. *Reproduction tasks* involve traditional vocabulary testing processes whereby students give a simple definition or
choose the correct definition in a multiple-choice format. *Skill-in-action tasks* “provide more information about the quality of knowledge, thus taking into account that word knowledge is fluid rather than fixed” (Nist & Olejnik, 1995, p. 178). With this type of task students would be asked to give an example or identify an example. *Process tasks* require students to interact with new words and then show the knowledge they have acquired about the words.

In light of the different tasks which compose vocabulary tests, it would make sense that a sound and effective vocabulary test would incorporate all three tasks so as to tap all the varying degrees of word knowledge (Kameenui, Dixon, & Carnine, 1987). If students can give or identify a definition, provide examples of new words, and generate sentences accurately, they are progressing toward more conceptual and thorough word knowledge (Nist & Olejnik, 1995).

**Gender Differences and Academic Achievement**

In this researcher’s extensive review of the current literature on gender differences and academic achievement with elementary school children, it was noted that there were few studies on gender differences in the field of literacy compared to the abundance of studies conducted in the 1960s and 1970s. Furthermore, in the current literature, there were few studies on gender differences and reading achievement compared to the studies on gender differences and achievement in science and mathematics. Regarding the literature on reading and gender differences, most studies explored gender reading preferences and attitudes toward reading, and gender stereotypes found in literature. A study by Millard (1994), for example, found that school reading was of more interest to 10- and 12-year old girls than boys, and that boys preferred
nonfiction books, magazines, and comic books. Currently, also, there is much debate concerning the hypotheses that males do or do not view reading as a feminine activity.

This researcher’s extensive search for studies on gender differences and reading achievement was exhaustive and rather disheartening. Although gender exercises a strong influence in education, particularly in literacy, gender issues in literacy do not seem to be a popular topic among today’s researchers, learning experts, and educators. Relatively little current literature was found on gender differences and reading achievement, a finding also reported by Cassidy, Garcia, and Boggs (2005).

A quick survey of the International Reading Association’s journals confirmed this recent lack of interest in gender issues in the field of literacy. Between January of 1995 and May of 2004, there were approximately 690 articles in the Journal of Adolescent & Adult Literacy, and of those, only about 20 dealt with gender. During that same period, there were approximately 260 articles in Reading Research Quarterly, with about only 10 of them dealing with gender or sex. The Reading Teacher published approximately 550 articles during that time, and only about 5 of those dealt with gender or sex. Thus, less that 2.5% of the articles appearing in the Association’s journals in that time frame had anything to do with gender. (p. 142)

In spite of this Rip Van Winkle syndrome among researchers and educators to study gender differences and reading achievement, there has been a reawakening of interest by other popular media due to the mounting violent behavior of adolescent boys (Pollack, 1998). The concern for the behavior of adolescent boys and their unique needs began to surface in writings by educators in general and literacy educators (Brozo, 2002),
and even more attention will be given to the topic when males are retained due to their failing state exams (Cassidy & Cassidy, 2002/2003). While the needs of boys are warming up to become a future “hot” topic, Lehr (2001) advises that issues concerning girls and reading deserve as much concern.

Gender Science

For many decades, there have been many pedagogical, sociological, and psychological studies on how boys and girls learn by observing their social interactions, psychological development, socialization, and gender roles. In the last twenty years, however, a new approach of understanding how children learn is focused on the physiological, biochemical, and neurological differences in their minds and bodies. For example, past research generally determined that males excel in some disciplines and females are superior in others. In the last ten years, however, new “brain research” shows that boys and girls are not intrinsically the same, and a new “gender science”-- the brain sciences and the social sciences-- is revealing that some of the assumptions about gender in the last 100 years of education were not at all accurate (Gurian & Stevens, 2005). These new nature-based gender science findings can provide teachers with more successful methods for teaching boys and girls in all the disciplines. The following findings (Gurian & Stevens) are of interest to this study that encompasses gender differences and reading achievement.

1. Young males are fueled with “boy energy.” They are physical, almost always in motion, kinesthetic. In observations of boys reading books, they often tap their feet, move their legs, or dart their eyes about in exploratory, impulsive excitement.
2. PET scans and MRIs have shown that there are at least 100 differences in male and female brains. The male brain, more than the female brain, relies on spatial mechanical stimulation and is, therefore, more stimulated by pictures, diagrams, and moving objects.

3. Boys have more dopamine in their bloodstream which increases impulsive risk behavior and more blood flow in their cerebellum which controls physical action. Both factors contribute to a boy’s tendency to learn less well than girls when sitting still, especially for long periods of time.

4. The female corpus callosum (the connecting bundle of tissue between hemispheres) allows more cross-talk between the hemispheres than the male corpus callosum. Girls, therefore, have the greater ability to do more than one task at a time successfully. On the average, females are superior to males at multitasking when tested.

5. Boys’ brains, overall, operate with 15 percent less blood flow than brains of girls, and generally do not move between tasks as quickly as girls. A boy’s sensory center takes longer to make a transition between tasks, a necessity that can lead a teacher to assume that he isn’t listening to instruction or won’t do the task

6. Girls have stronger neural connectors in their temporal lobes than boys. These connectors promote more detailed memory storage and better listening. Boys, in general, pick up less of what is happening, especially when it is said in words. Because boys tend to listen less well than girls, teachers may need to adjust the tone of voice and avoid speaking in monotone.

7. The male brain is designed to renew, recharge, and reorient itself by moving into a state of rest. MRIs have found this rest state to be essential to male brain activity,
but a male’s rest state presents problems in the classroom. In a female rest state, the blood flow is still very active, and so girls can be bored with a lesson but stay awake and continue completing the assignment. In a male rest state, the blood flow is not as active and boys often go to sleep during a lecture, daydream and not complete assignments, stop taking notes, and make noise with their pens or pencils to stay awake.

8. Girls score an average of one year to eighteen months higher in reading and writing grade levels. Reading and writing come easier for most girls because they have more areas of their brain geared for verbal functioning, sitting still, listening, sensory memory, and talking across the hemispheres.

Gender and Academic Achievement

The physiological, biochemical, and neurological differences previously discussed help in understanding the different factors that are influential in the learning processes of boys and girls, resulting in gender differences in academic behavior and achievement. Various other studies have indicated that certain differences show up between the sexes, and that these differences are results of biological, hereditary, and environmental factors.

From an early age, environment can influence academic achievement. Play activities can shape children’s learning abilities for many years into the future, and gender is perhaps the most significant factor in choosing a toy and play activity (Greenberg, 1986). Boys’ toys encourage exploration, experimentation, movement often outdoors, and activities that are usually competitive and combative (Spatig, 1987). Girls, on the other hand, often play with small toys and dolls that help them recognize small differences. Also, girls are highly verbal as they talk to some of their play toys. In
contrast to boys, girls are more involved in nonviolent and nurturant activities (Buteyn, 1989). According to studies from their scientifically based Gurian Institute, Gurian and Stevens (2005) observed that,

Little boys, when given dolls to play with, more often than girls pull the heads off, hit them against a table, throw them in the air, or generally engage in some kind of physical, kinesthetic, or spatial play with the dolls. Girls, in contrast, from very early in life, begin to use words with the doll. Given how much earlier the female centers for verbal communication develop in the brain, this comes as no surprise. Because of higher levels of oxytocin, girls form bonds with objects that boys merely use as physical learning tools. (p. 59)

The elementary classroom environment itself seems to affect the academic achievement of one sex over the other. Berliner (1988) concluded that (a) teachers interact with boys more often in math activities and challenge them to achieve, while their interaction with girls is more remedial; (b) competition in math by timed tests or games is detrimental to girls’ achievement because boys are more competitive and aggressive; (c) cooperative learning strategies with higher-level math activities help girls achieve more than boys; (d) when socialization is not allowed, girls work better independently; and (e) girls are allowed to socialize in class more than boys because girls tend to be less disruptive.

Supporting the observations by Gurian and Stevens (2005), an earlier study by Marshall and Smith (1987) found that there were gender differences in academic achievement even in the early years. Girls, for example, had more potential for sitting still in class than boys, were better skilled at completing routine, well-defined procedural
tasks. Results from a ten-year longitudinal study by Becker and Forsyth (1990) showed that gender differences recognized in grades 3 through 8 remain relatively consistent through the high school grades. Of much interest to this researcher is that Becker and Forsyth’s study also contributed evidence that males consistently scored higher than females in vocabulary across all grades.

Another theory of gender differences in reading achievement points to the factor of earlier maturation of girls. On the average, girls learn to speak at a younger age, and thus have an inherent advantage in later language development that includes writing, spelling, grammar, and acquiring a foreign language (Bentzen, 1966). The link between maturation and reading achievement is difficult to demonstrate, however, because of other factors that might also explain the variation in reading skills between boys and girls. First, it is likely that a child who matures physically at an early age would be expected to act more like a young adult. In the United States, also, the socialization process tends to allow boys to be more aggressive and active, whereas girls are expected to follow certain behaviors for being nonaggressive, quiet, and conforming. Success in reading generally points to this passive, quiet, attentive, and conforming behavior. In this respect, the socialization process of girls, more than early maturation, would account for their higher reading scores. Cross-cultural research studies, however, have indicated that it is not universal that girls are better readers than boys (Johnson, 1976).

Reading Attitudes. In general, boys and girls enter school with positive attitudes toward reading, but as boys mature they often perceive reading and books as a female activity (Shapiro, 1990). In 1994, Millard observed and interviewed 10- and 12-year-old students and determined that school reading was more important to the interests of girls
than to boys. Furthermore, her study showed that struggling readers, usually boys, did not expand their reading interests and did not see the purpose of reading in school.

These findings fueled another study by Millard (1997) in which 225 students were surveyed about their perceptions and practices in reading. From students’ comments, it was determined that from an early age, reading was identified as a female activity for several reasons: (a) both boys and girls designated their mothers and other female relatives as models for reading; (b) mothers read to them or with them, while fathers read newspapers and read for work-related reasons or for specific purposes; (c) girls received books as presents more than boys; (d) book illustrations more often showed girls as readers; (e) most girls considered themselves readers and book lovers, while most boys did not; (f) girls read more than boys and they read for pleasure; (g) boys read when they were required to in school and for assignments; (h) girls talked about books they had read in conversations with family or female friends; (i) boys did not like to discuss reading or what they had read; (j) most boys remembered very little about learning to read, and those who did remember said that reading was not easy for them; and (k) most girls remembered the process of learning how to read and recalled that it was enjoyable.

In 1995, a national survey by McKenna, Kear, and Ellsworth was conducted on 18,186 children’s attitudes in grades 1 through 6 toward reading. The results showed that (a) children’s attitudes toward recreational and academic reading begin positively in Grade 1 and end in indifference by Grade 6, (b) negative attitudes toward recreational reading are related to reading ability, (c) both boys and girls prefer recreational reading over academic reading, and (d) girls have a more positive attitude toward recreational and academic reading than boys at all grade levels.
Many years of research have led reading experts to conclude that boys, in general, will read only what interests them, and they will ignore and deliberately reject reading material that is boring to them. Gurian & Stevens (2005) stated that this behavior fits their hormonal, neurological, and psychological base. For example, boys may resist reading their science and social studies textbooks, but they will read a Harry Potter book in less than two days. Research by Asher and Merkel (1974) demonstrated that if boys are interested in the subject matter, they read as well as girls. Nevertheless, the consensus among boys is that it is not “cool” to read a long novel or talk to other boys about books. When it comes to reading, most boys think the “in” thing to do is to focus on sports, electronics, and games on the Internet and in newspapers and magazines (Blair & Sanford, 1999).

One study on the behaviors of elementary school students indicated that fourth-grade girls were more involved with text and they appeared to be deeper thinkers than boys; in the sixth-grade, girls were more deliberate in using study strategies and they were more serious about reviewing for tests than boys (Hancock, Stock, Kulhavy, & Swindell, 1996). In that study, as well as in other various related studies, gender differences in study strategies appear to account for gender differences in academic achievement. It would make sense, then, that girls have a significantly more favorable attitude toward reading and reading-related concept than boys (Nielsen, 1977).

It can be concluded that boys and girls read different kinds of books and for different reasons. Research studies have reported differences in how boys and girls learn by observing their social interactions, psychological development, socialization, and
gender roles. Gender science is revealing the physiological, biochemical, and neurological differences in their minds and bodies.

It is alarming that the latest national test scores confirm that girls have met or surpassed the reading performance of boys at all grade levels. The NAEP (National Assessment of Educational Progress) shows that the gap between reading scores of fourth-grade males and females was even larger in 2000 than 1998 (Taylor, 2005). This gender gap in literacy is equivalent to about 18 months of school (Gurian, 1998). Clearly, schools are failing to meet the reading needs of the majority of boys in our nation.

In the classroom, teachers need to give students choice and control in reading material, as well as to provide activities and topics that are of interest to both genders. The opportunity for boys and girls to chose their own reading materials increases positive feelings about reading and it increases reading achievement (Worthy, Turner, & Moorman, 1998). While there are definite gender differences in learning and reading achievement, all boys and girls are unique individuals. Literacy educators must be careful not to make stereotyped assumptions about children’s interests, preferences, learning processes, and academic achievement potential.

**Summary and Synthesis**

The five strands of research reviewed in this chapter provide a theoretical and empirical base for the feasibility of the present study. The significance of strategic instruction and the importance of a reader’s knowledge and use of comprehension strategies, the impact of a reader’s awareness and use of top-level expository text structure, and the advantage of using annotation for self-monitoring and self-testing must be considered in attempting to enhance reading comprehension. Furthermore, educators
are becoming more aware of the importance of vocabulary development and academic achievement. The need for more effective vocabulary instruction is the focus of much reading research.

Educators also need to consider the importance of gender differences and reading achievement. Past research has focused on boys’ and girls’ psychological development, socialization, and gender roles, whereas more recent research in gender science has revealed over 100 physiological and neurological differences in their minds and bodies. In the last 30 to 40 years, research on gender differences and reading achievement has been sparse. Because girls and boys think, feel, and learn differently, research in this field is critically needed so that teachers can be armed with successful methodologies to help each gender achieve academic success.

It has been determined that students of all ability levels and all grade levels have much difficulty comprehending expository texts. Students with reading disabilities or struggling readers face even more challenges in comprehension of texts in the content areas due to (a) poor metacognitive skills, (b) inadequate decoding skills, (c) a lack of comprehension strategies or a lack of knowing how to use them, (d) poor vocabulary development and knowledge, and (e) not comprehending what they read.

Poor reading comprehension spawns other problems for students. Some of these problems include low self-esteem, poor behavior, failure to learn the assigned material, and failure in passing tests (Hall, 2004).

Students need a repertoire of mature reading comprehension strategies. This requires direct instruction and modeling of how, when, and why to use different strategies, as well as guided and independent practice. Two such strategies are use of top-
level expository text structure and annotation textmarking. Knowledge of common top-level expository structures can assist the reader in anticipating and verifying the structure of the ideas and information in a passage. Annotating key concepts demands cognitive processes of the reader that entails active interaction with the text. It has been determined that the effect of using writing in connection with reading provides superior retention as opposed to the use of reading without writing (Harris, J., 1990). Both strategies have a positive effect on comprehension and recall of expository text. The combination of identifying top-level expository text structure with annotation textmarking can provide a powerful strategic tool that the reader can use to make sense of the written word.

Another reading comprehension strategy involves vocabulary knowledge and development. Broadening and extending vocabulary knowledge is a vital part of the literacy needs of students (Irvin, 1998). Review of the literature indicated that effective vocabulary instruction must include a repertoire of oral and written strategies. Despite teachers’ efforts to help students learn vocabulary in a variety of ways, many students still struggle to comprehend and develop independent word learning strategies. Vocabulary lessons that generally consist of learning about context clues, examining word structure, and using reference books are suitable for average and above average students, but not for the below average readers who cannot transfer the vocabulary strategies to their independent reading (Harmon, 1998a). Not surprisingly, poor readers quickly realize the uselessness of these strategies that fail them when they try to comprehend text passages containing weak word meaning clues (Schatz & Baldwin, 1986). Vocabulary instruction can increase reading comprehension, but only when
instruction gives rich experiences with words (Beck & McKeown, 1991) and provides
definitional and contextual information (Stahl & Fairbanks, 1986).

What is unique about this study is that two powerful reading comprehension
strategies, text structure and annotation, are combined and interrelated throughout reading
instruction to help students comprehend informational text more efficiently. In addition,
the effect of this combined reading strategy is compared to the effect of another valuable
reading strategy, vocabulary development. Furthermore, pre-fourth-grade students are
addressed intentionally in this study. The demands and expectations of comprehending
content area texts await them. Expository text in the form of science and social studies
books will replace many of the storybooks that they have been accustomed to hearing and
reading. Almost without warning, the table of learning will turn, and these young novices
need to be prepared. In their first two to three years of primary school, they have been
learning to read. Now, and in much of their future, they will be reading to learn.

Overview

Chapter Three, Method, describes the methods used in the study which include
the purposes of the study, the hypothesis, participants, design, curriculum and materials,
procedures, and instruments to measure key variables. Chapter Four, Results, discusses
the research design and analysis of the data. Chapter Five contains a summary of the
problem, purpose of the study, research questions, hypothesis, methodology, results,
conclusions and implications, limitations of the study, recommendations for future
research, and contributions.
CHAPTER THREE

METHOD

The following sections of this chapter describe the purposes of the study, the research questions, the hypothesis, participants, design, curriculum and materials, procedures, instruments to measure key variables, and summary.

Purposes of the Study

The purposes of this study were to determine (a) if the method of teaching text structure with annotation produced higher comprehension scores than the method of teaching vocabulary to pre-fourth-grade readers, (b) if the method of teaching text structure with annotation produced higher vocabulary scores than the method of teaching vocabulary to pre-fourth-grade readers, (c) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension was the same for male and female students, and (d) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary was the same for male and female students.

The effects were measured by immediate posttest and follow-up test NCE scores of the SDRT4, Forms J and K, containing the components of Comprehension and Vocabulary. NCEs (Normal Curve Equivalents) are normalized standard scores with a mean of 50 and a standard deviation of 21.06.
Research Questions

The following questions were examined:

1. Does the method of teaching expository text structure with annotation produce higher reading comprehension scores than the method of teaching vocabulary to pre-fourth graders, as measured by the SDRT4, Forms J and K, containing the components of Comprehension and Vocabulary?

2. Does the method of teaching expository text structure with annotation produce higher vocabulary scores than the method of teaching vocabulary to pre-fourth graders, as measured by the SDRT4?

3. To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension the same for male and female students?

4. To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary the same for male and female students?

Hypothesis

It was hypothesized that after three weeks of instruction in either text structure with annotation or vocabulary, that scores on the immediate posttest (Form K) and the follow-up test (Form J) on the Comprehension component of the SDRT4 would be higher for the pre-fourth-grade students in the Text Structure Annotation (TSA) group than the pre-fourth-grade students in the Vocabulary Knowledge (VK) group.

As an additional analysis to the TSA and VK comprehension scores, vocabulary scores were collected and compared for the two groups. There was no hypothesis
formulated or directed at this variable. In addition, there was no hypothesis specified for the potential differential effects of instruction for male and female students.

Participants

Recruitment

The accessible population for this study consisted of 271 middle- and upper middle-class suburban pre-fourth-grade students enrolled in 14 local private schools that were of moderate to high socioeconomic status. The schools were Christian schools, Catholic diocese schools, and nondenominational schools located in one county in southwest Florida (see Appendix F). These schools, having similar admission policies and student requirements, were chosen for the study because of the researcher’s knowledge of these types of schools, familiarity with the schools’ administrations, and prior work and academic relationships with many of these schools.

To ensure privacy, first contact with the parents was made through the schools’ administrators who sent letters from the researcher to the homes of the 271 potential participants in February 2004. The letters invited participation in the study, and included parental consent forms and choice of session forms.

The letters also informed families about the purpose of the study, the types of reading instruction that would be given in workshop settings, details about the procedures that would be used to randomly assign students to one of two types of instruction, the activities and benefits received from participation in either reading workshop class, and the importance of commitment and regular attendance. Also included were the location, dates, and times of the required pretest, the sessions, and the reading workshop classes.
Furthermore, parents were informed about a required posttest and follow-up test (see Appendix G).

The IRB (Institutional Review Board) parental informed consent forms discussed the purpose of the study, general information about the study, total hours of student involvement, benefits of taking part in the study, expectations of students, confidentiality of students’ records, and the choice to participate. In order to participate, the signatures of the parent and student were needed as required by the IRB.

A preferred choice of sessions was offered by the researcher so as to lessen interference with summer vacations and maximize the volunteer population. On the sessions form, parents were asked to check which 3-week session they preferred: Session 1, June 22-July 8 or Session 2, July 13-27. The consent and session forms were returned in pre-stamped envelopes by the parents to the schools that then gave them to the researcher. All further correspondence was directly between the researcher and families of student volunteers.

Selection of Students for the Study

Of the accessible population of 271 pre-fourth-grade students, 87 volunteers (48 girls and 39 boys) consented to participate in the study. Forty-six children were assigned to Session 1 (25 girls and 21 boys) and 41 children (23 girls and 18 boys) were placed in Session 2.

In April 2004 at a private church school, the 87 student volunteers were pretested on the SDRT4, Form J. The pretest was administered to the students in four classrooms with one test instructor for each class. The Comprehension and Vocabulary components of the test were administered under standardized timed conditions. Immediately
following the SDRT4 pretest, the researcher determined if students in this pool had prior knowledge of and used expository text structure with annotation as a reading comprehension strategy. To make this determination, students were given copies of six paragraphs representing six expository text structure models (Mason & Au, 1986; Vacca & Vacca, 1986; Anderson & Armbruster, 1984) from fourth-grade texts. Students were instructed to study the passages in preparation for 10 test questions. They were informed that pencils, pens, and highlighters were available to use on their papers. The researcher and another teacher examined the paragraphs for textmarkings that would indicate students’ prior knowledge of text structure and annotation as a learning strategy. The paragraphs were examined for textmarkings of (a) notes and summaries, (b) enumerated listings and sequences, (c) coded information, and (d) underlined or highlighted main ideas and supporting details. Other than a few drawings and doodles on the copies, the researcher and the other teachers agreed that there was no evidence of textmarkings in any of the paragraphs, an indication that these students did not have prior knowledge of text structure or the use of annotation as a learning strategy. Based on this result, none of the 87 students were excluded from the study.

The children within each session were ranked and matched on the Comprehension component of pretest SDRT4 (Form J) NCE scores and then randomly assigned to the treatment (TSA) and comparison (VK) groups. For Session 1, there were 24 TSA students and 22 VK students; for Session 2, there were 19 TSA and 22 VK students.

Student Withdrawals Prior to Sessions. Although the pretest was administered in April 2004, instruction did not begin until June when all volunteer students were
dismissed for school vacation. Between the time of pretesting and instruction, 17 students withdrew from the study before taking part in any instruction. Given the length of time between pretesting and instruction, and in addition to the fact that instruction took place during the summer vacation, the researcher was aware that students might withdraw from the study to participate in other activities. To help control for mortality, throughout May and June the researcher sent to the homes of the volunteer students several informative letters, reminder notices, and notes about enjoyable reading activities. Since the students would not receive grades or academic points as incentives for their efforts, all correspondence emphasized punctuality, commitment, and consistency in participation.

Despite these efforts, 6 students (2 boys and 4 girls) withdrew from the study prior to the start of Session 1. Eleven students (5 boys and 6 girls) withdrew prior to Session 2. Session 1 was then composed of 40 students (22 TSA and 18 VK) and Session 2 was reduced to 30 students (13 TSA and 17 VK).

The withdrawals were not surprising since the reading classes were scheduled during summer vacation and nonattendance is common with young children. Two students withdrew because of health and medical reasons. Four children chose to participate in summer camp activities that included day field trips. Three students went on vacations, and one student declined participation because she “hated to read.” Some parents had time and transportation issues involved with the sessions’ two-hour, twice a week, 3-week schedule. It is also possible that some of the initial group of 87 who took the pretest reconsidered their commitment involved in an actual study.

For the 17 students who withdrew prior to instruction, analysis of the pretest data showed a Vocabulary mean score of 41.80 and a Comprehension mean score of 44.95.
These scores are comparable to the mean scores of students who completed the study.

Pretest data indicated that for the 57 students who completed the study, the Vocabulary mean score was 44.80 and the Comprehension mean score was 48.22. Compared to students who completed the study, the mean score for those who withdrew prior to instruction was 3.0 lower in Vocabulary and 3.27 lower in Comprehension. For both the 17 dropouts and 57 participants, their scores were comparably not the highest or the lowest scores on the SDRT4 pretest.

**Attrition During Sessions.** This instructional phase of the study was presented as two independent 3-week reading workshop sessions for students going into fourth grade. The second session duplicated the first with different participants. As a result of student withdrawals prior to the start of classes, Session 1 began in June with 40 participants (22 TSA and 18 VK students), and Session 2 began in July with 30 students (13 TSA and 17 VK students).

The workshop environment provided motivating and challenging learning experiences, and it promoted active participation. To accommodate different learning styles, students’ learning experiences and activities were geared for individual, paired, and small group involvement. To lessen the threat of attrition during the sessions, the researcher made classroom instruction and various workshop activities in both the TSA and VK groups active, interesting, and desirable.

During this phase of the study, however, 5 TSA students (3 boys and 2 girls) withdrew in the middle of Session 1 because of other summer activities. Also two TSA students (twin girls) attended all classes but did not take the posttest. In the Session 1 VK group, three students (2 girls and 1 boy) withdrew from the study due to health problems
and vacations. These 10 withdrawals resulted in a final total of 30 participants in Session 1 (15 TSA students and 15 VK students).

In July, Session 2 began with 30 participants (13 TSA and 17 VK students). In the TSA group, one boy withdrew in the last week of the session. In the VK group, one boy withdrew after the first week of classes, and one VK girl attended all classes but did not take the posttest. These three withdrawals resulted in a final total of 27 participants in Session 2 (12 TSA students and 15 VK students).

For the total 13 students who withdrew during the sessions of instruction, analysis of the pretest data (further discussed in Chapter Four) showed a Vocabulary mean score of 33.65 and a Comprehension mean score of 33.03. Their scores are lower than the scores of the 17 students who withdrew before instruction and lower than the scores of the 57 students who completed the study. Compared to the students who withdrew prior to instruction, the mean score was 8.15 lower for Vocabulary and 11.92 lower for Comprehension. Compared to the scores of students who completed the study, the mean score for those who withdrew was 11.15 lower for Vocabulary and 15.19 lower for Comprehension. This group of students who withdrew during instruction appears to be the weakest in vocabulary and comprehension skills. Sadly, these students dropped out during the sessions, when, according to their NCE pretest mean scores, they could have benefited the most from instruction and practice in vocabulary and text structure skills.

Further analysis was done to determine differences in pretest scores of students withdrawing from the VK group and those withdrawing from the TSA group. The Vocabulary mean for students dropping out of the VK group was 33.60, which was .09 below the TSA dropouts’ Vocabulary mean of 33.69. For Comprehension scores, the VK
group mean was 35.52 compared to the TSA group mean of 31.48. A $t$-test for equality of means was conducted to evaluate differences in pretest means between the VK and TSA students who withdrew from the sessions. No statistically significant differences were found for Vocabulary, $t(11) = 0.992, p > .05$, or for Comprehension, $t(11) = 0.685, p > .05$. Using Levene’s test for equality of variances, no statistically significant differences were found in VK and TSA group means on the Vocabulary pretest, $F(1,13) = 0.122, p > .05$, or the Comprehension pretest, $F(1, 13) = 0.126, p > .05$.

In review of number of cases for the study, there were 87 students who took the pretest, followed by 17 withdrawals prior to instruction, and 13 dropouts during the sessions of instruction. With the researcher being the sole instructor for all groups, the sample size used in this study ($n = 57$) provided for more efficient instruction, student-teacher interaction, and positive reinforcement and feedback in the classroom setting. Vocabulary and Comprehension scores on the posttest and follow-up test were obtained from these 57 students’ responses on the SDRT4, Forms K and J.

**Design of the Study**

The design of this study was a quantitative true experiment using a matched comparison-group format. Eighty-seven pre-fourth-grade volunteers were matched on the SDRT4, Form J, Comprehension NCE scores. Highest to lowest NCE scores of students in each session were listed. Matching was done by pairing the first two scores, the next two scores, and so forth. For each pair, a flip of a coin by a teacher assistant randomly assigned the paired students to either the Text Structure Annotation group (TSA) or Vocabulary Knowledge group (VK) for each session. The ranking, matching, and random assignment procedures were used to enhance internal validity. Due to attrition prior to
and during the sessions, a total of 30 students comprised Session 1 (15 TSA, 15 VK) and
27 students were in Session 2 (12 TSA, 15 VK).

The manipulated independent variable in this study was the type of instruction
with two conditions: (a) training in top-level expository text structure through the use of
annotation textmarking, and (b) training in vocabulary acquisition and development. The
continuous dependent variables were students’ posttest performance on the
Comprehension and Vocabulary components of the SDRT4, Form K (immediate posttest)
and Form J (follow-up test). A brief description of these conditions follows.

One condition consisted of instruction, modeling, and practice of various
approaches to identify and annotate expository text structures. Text structure and
annotation are two individual reading strategies, each of which has been shown to
improve reading comprehension. The researcher combined these two reading strategies to
help students better comprehend informational text. Using copies of excerpts from fourth-
grade textbooks borrowed by the researcher from their respective schools, TSA students
(a) wrote brief summaries in the text margins, (b) enumerated multiple ideas (e.g., causes,
effects, descriptions, orders of events), (c) noted examples of concepts by writing EX in
the margin, (d) identified key information from the text on graphs and charts, (e) wrote
possible test questions, (g) selectively underlined key words or phrases, and
(h) transferred important information to visuals in the form of outlines, charts, maps, and
webs. They also participated in active oral activities that encouraged them to explain
verbally the thinking processes involved with critical reading of expository text.

The second condition consisted of instruction, modeling, and practice with skills
to determine word meanings. There appears to be a relationship between students’
vocabulary test scores and their ability to know words when taking a reading comprehension test. In following Ruddell’s (2001) point about vocabulary instruction, this researcher strived to help VK students develop and extend their word learning through integration of novel ideas with their existing knowledge base and assimilation of those words into working vocabularies. The children were engaged in a variety of oral expression activities to help them learn new words and expand their use of familiar words. They also participated in written and oral activities that encouraged them to use new words beyond the definitional level. VK students used question-asking activities and learned words from a variety of texts, including the same expository paragraphs that were used with the TSA students.

Materials, Curriculum, and Instruction

The TSA and VK groups each received the equivalent amount of 10 hours of beneficial instruction, modeling, and practice. The contrast between the two groups was between receiving expository text structure training through the use of annotation, and receiving vocabulary acquisition and development. For both groups, the workshop environment provided motivating and challenging learning experiences, and it promoted active participation.

To accommodate different learning styles, the curriculum for the TSA group (see Appendix H) and the curriculum for the VK group (see Appendix I) provided learning experiences and activities that were geared for individual, paired, and small group involvement.
TSA Group

For the TSA students, five 2-hour lessons consisted of instruction, modeling, and practice of various approaches to identify and annotate six expository text structures. Applying the instructional format used in a study by Reese (1988) which investigated the effect of training in top-level expository text structure on reading comprehension, instruction in this study included the following steps: (a) explain what text structure and annotation are and why they are useful, (b) model the strategies through think-aloud analysis of the text structure patterns and annotating transparencies of paragraphs with markers, (c) give guided practice and feedback by annotating paragraphs on transparencies while participants annotate their copies of the paragraphs, (d) provide students with independent and group practice in identifying top-level expository text structure and annotating a variety of text passages, and (e) provide immediate feedback and positive reinforcement with correctly annotated paragraphs on transparencies.

Prior to the study, paragraph excerpts representing six kinds of top-level structures were chosen by the researcher and coded for type(s) of text structure. These paragraphs were independently analyzed and categorized for text structure types by two Ph.D. professors, including Dr. Diane Reese, whose published dissertation in 1988 focused on the effect of training in expository text structure on reading comprehension of ninth-grade students. Upon consensus of the types of text structures represented by the various paragraphs, 90 paragraphs were selected and duplicated for each TSA and VK student in Session 1 and Session 2.

Sources for the expository text passages used in the six classes were derived from (a) Getting the Main Idea, Levels D and E (see Appendix J) by Boning (1970), and
(b) excerpts from the fourth-grade science and social studies texts used in the participants’ schools. The paragraph passages represented the following six text structure models: (a) definitions and examples, (b) simple listing, (c) ordered listing, (d) comparison/contrast, (e) cause/effect, and (f) problem/solution.

Reading and annotation activities were designed to help students progressively build their knowledge and use the six different models of text structure to better comprehend informational text. Each text structure model was introduced and practiced one class at a time, except for two similar models (cause/effect and problem/solution) that were presented in the same class. Text structure and annotation skills were continually reinforced by the inclusion of models previously learned and embedded in increasingly more complex paragraph excerpts.

To help activate schema, aid in recall, and strengthen retention of text information as the students learned expository text structure, the researcher modeled the transfer of important information to outlines, charts, webs, and maps. These graphics helped students connect related context ideas in meaningful, visual structures and required them to actively translate their existing knowledge and experience. The use of visuals provided yet another learning strategy to enhance reading comprehension.

Using and annotating paragraph excerpts from their schools’ science and social studies texts, this progression of skill attainment and practice included a sequence of: (a) finding paragraph topics, (b) finding the stated main idea, (c) finding supporting facts, (d) charting and mapping important information, and (e) predicting and writing test questions and the answers based on the important information found (see Appendix K).
As students progressed in their understanding and use of annotation and text structure, more complex paragraphs were used for practice in identifying multiple text structures within one paragraph. Think-aloud activities encouraged students to explain their thinking processes involved with choosing important text information versus omitting trivial information in the paragraphs.

**VK Group**

For the VK students, five 2-hour lessons consisted of instruction, modeling, and practice with skills to determine word meanings. Vocabulary strategies included: (a) context clues; (b) vocabulary webs and word maps; (c) synonyms and antonyms; (d) analogies; (e) figurative language- idioms, metaphors, and similes; (f) prefixes and roots; (g) multiple literal meanings; (h) dictionary and thesaurus use; (i) crossword puzzles; and (j) word banks.

Following the instructional format used by Reese (1988), instruction for the VK group included: (a) introducing one vocabulary strategy at a time and explaining why it is useful, (b) modeling a think-aloud of how to use the strategy with new words while demonstrating a “flow chart of thinking” on overhead transparencies for students to see, (c) giving guided practice and feedback by using transparencies while participants use new skills, (d) providing students with paired and small group activities for composing sentences using new words on transparencies for class presentations, and (e) providing students with group and independent practice in developing vocabulary skills that will make it possible for them to figure out the meanings of new words.

Materials used in the five classes consisted of: (a) paragraph excerpts from the students’ fourth-grade science and social studies texts (the same paragraphs used with the
TSA students), (b) crossword puzzles, (c) dictionaries and thesauruses, (d) word maps, (e) vocabulary webs, (f) comic strips, (g) students’ illustrations on transparencies, and (h) various practice activities and games for context clues, structural analysis (e.g., prefixes, suffixes, compound words), and other specific vocabulary lessons.

As suggested by Francis and Simpson (2003) the researcher modified the traditional methods of vocabulary instruction by incorporating more oral expression activities, and designing activities to encourage students’ deeper levels of understanding. To help activate schema, aid in recall, and strengthen the learning of new words, the researcher and students used new words in discussions and connected new words with familiar words in webs and word maps. This strategy helped the VK students link related context ideas in meaningful, visual structures and it required them to actively translate their existing vocabulary knowledge and experience. The use of these visuals provided another vocabulary learning strategy to enhance reading comprehension, a particularly valuable tool for tackling the technical vocabulary predominant in expository text.

The curriculum engaged the students in a variety of oral expression activities prior to writing activities to improve their vocabulary knowledge and their reading comprehension. Oral expression activities, such as generating sentences with new words, preceded writing activities for two important reasons. First, the researcher could clarify misunderstandings and questions in class discussions about definitions, characteristics, synonyms, and antonyms of new words. Second, students could create sentences using the new words and share the sentences orally with partners or the entire class. This opportunity allowed them to hear many examples of using the word correctly and incorrectly (Francis & Simpson, 2003).
Vocabulary skills activities were designed also to promote students’ deeper levels of understanding. Both fluent and less fluent readers have difficulty with vocabulary task questions that require them to create meaningful sentences, a significant indicator of their entire, flexible word knowledge (Francis & Simpson, 2003). As suggested by Simpson and Randall (2000), commercial materials used in this study were examined for matching and multiple-choice formats that gave practice only with surface-level word knowledge.

To encourage students’ deeper levels of understanding, the following sequence of instruction and activities was used, as suggested by Francis and Simpson (2003):
(a) students read different types of texts such as newspapers, magazines, and content area texts; (b) they identified and made lists of words they did not know; (c) the most frequently mentioned words from the students’ lists were addressed as the top 10 vocabulary choices for the class period; (d) students had class discussions about the words and used them with partners; and (e) students participated in a variety of follow-up written formats, such as a question-asking activity with paired words that motivated them to think deeper than the definitional level of the new words (Beck, Perfetti, & McKeown, 1982), and the cognitive process of exclusion (Francis & Simpson).

Procedures

The study took place in the media center at a private church school with a surrounding waterfront view that provided an aesthetic and comfortable setting and ensured minimal distraction. In Session 1 (June 22- July 8), the TSA group attended morning lessons on Tuesdays and Thursdays from 10:00 a.m. to 12:00 noon for a total of 10 hours of instruction and practice in text structure and annotation skills. The posttest was taken in the sixth class, the last Thursday of the third week. The VK group met in the
afternoon on Tuesdays and Thursdays from 1:00 p.m. to 3:00 p.m. for a total of 10 hours of instruction and practice in vocabulary skills. The posttest was taken in the sixth class, the last Thursday of the third week. In Session 2 (July 13-27), to control for time of day, the VK group attended the morning classes and the TSA group attended the afternoon classes. The posttest for each group was given in the sixth class, the last Thursday of the third week.

**Conditions to Minimize Extraneous Variables**

Conditions were arranged to reduce treatment diffusion by scheduling morning classes to end at noon, one hour before afternoon classes began. This gave sufficient time for morning students to leave before afternoon students arrived, and thus, the chance of participants being in close proximity to each other during the experiment was minimized. It is possible that TSA and VK students, particularly those who were friends from the same schools, discussed their reading activities by phone, e-mail, or when together over summer vacation.

To minimize compensatory rivalry, compensatory equalization of treatments, and resentful demoralization of the VK groups, the researcher (a) was enthusiastic and stressed the learning benefits received from participating in either the text structure group or the vocabulary group, and (b) minimized any perceived competition by the VK group by listening to their comments, observing their attitudes, and discussing their feelings about the TSA group. To help assure students in each group that the reading skills they were acquiring were important to their learning, the researcher demonstrated how both text structure with annotation skills and vocabulary skills are needed for fourth-grade task demands. In addition, students in both groups were continually reminded that they were
practicing reading skills with excerpts from their fourth-grade science and social studies texts. This knowledge may have helped make instruction and practice more meaningful to them as they became more familiar with fourth-grade level text structure and vocabulary.

Attendance Records

For each group, the 2-hours classes began with taking attendance. Absenteeism of participants can account for group changes and differences in scores on students’ posttests. Attendance records provided the advantages of documenting change in number of participants, as well as identifying TSA and VK students who received less instruction and practice. In Session 1, three TSA students missed one lesson each. In the VK group, seven students missed one lesson each and one student missed two consecutive lessons. In the Session 2 TSA group, four students missed one class each and one student missed the last two classes. In the VK group, three students missed one lesson each, two students missed two lessons each, and one student missed the first three lessons. These TSA and VK students missed the introduction of various new skills, the modeling of how to use these skills, and the opportunity to practice applying what they were learning.

The data showed a 0.49 mean for average number of days missed by VK and TAS participants \((n = 57)\). To determine if the extraneous variable of absenteeism was a factor that contributed to differences in scores within the TSA and VK groups, a \(t\)-test for equality of means \((p\) level set at .05) was used to compare the mean score of days missed by VK students compared to TSA students. Results indicated that the VK group and TSA group did not significantly differ in attendance, \(t(55) = 0.112, p > .05\). Furthermore, Pearson Correlations were computed for absenteeism and test scores on the Vocabulary
and Comprehension components of the pretest, posttest, and follow-up test. With correlations ranging from –0.10 (Comprehension pretest) to 0.16 (Vocabulary follow-up test), it was determined that attendance was not related to performance.

Lesson Procedures for the TSA Group

The researcher prepared to give instruction with student copies, highlighters and pencils, an overhead projector, and transparencies shown on a drop-down screen for several reasons. On the transparencies were printed the same paragraphs, blank webs and charts, and helpful clues for sorting out important facts as those printed on the student copies. The use of transparencies allowed the researcher to annotate the unmarked paragraphs with nonpermanent markers while verbally modeling the critical thinking processes involved when comprehending informational text. Students could listen how to select main ideas and major details, as well as observe how to annotate the paragraphs. Also, blank webs and charts for organizing information on the transparencies and student copies could be completed with the students after annotating the paragraphs. Students sat at tables informally arranged in the media center so that they could conveniently hear the researcher, see the transparencies, and accurately copy the annotations. The use of transparencies, student copies, and annotation with highlighters and pencils encouraged active participation in this reading and writing setting.

For each lesson, attendance was taken while a teacher assistant distributed pencils, highlighters, and copies of paragraphs to each student. A 50-minute activity modeled by the researcher is described as follows. On student copies and transparencies, a text structure model was presented with 5 paragraphs by Boning (1970) and 15-20
science and social studies paragraphs taken from the students’ school textbooks. The paragraphs, as previously discussed, clearly represented the type of text structure being introduced. Coincidentally, the 14 schools that these students attended often adopted the same textbooks. To stimulate student interest and involvement, the researcher wrote under the paragraphs the abbreviations of the schools from which the text paragraphs were chosen and brought these to the students’ attention.

In expository text, not all sentences and details are equal in importance. To help the students discriminate between major and minor details, the researcher verbally explained the thinking processes involved in deciding on the topic, and in sorting out the main idea and important details. After the researcher read aloud a paragraph, students annotated the main idea and supporting details in their paragraph as the researcher annotated the paragraph on the transparency. This critical reading and thinking process was further reinforced by the researcher pointing out facts in a paragraph that were interesting but not essential to understand the main idea, or facts that simply reinforced or explained previous statements. Students were encouraged to ask questions to help them clarify why some details and sentences were or were not of major importance.

After this whole class activity and a five-minute break, students were given 15-20 practice paragraphs to annotate for approximately 40 minutes. Grouped in pairs, they were encouraged to exchange thoughts and reasons for choosing the main idea and major details. Working in pairs allowed them to share verbally their reasoning skills as they discriminated between major and minor details and debated over information important enough to annotate. The researcher and teacher assistant circulated among the students to answer questions and guide them in annotation.
Following this paired-group activity, each paragraph on a transparency was shown, read, and annotated one at a time by the researcher. Students compared their annotated paragraphs to the transparency, and they were encouraged to question and challenge the choice of major details, as well as the omission of minor ones. Some paragraphs then were chosen for mapping or charting to organize information and reinforce comprehension (see Appendix L).

As a final activity, some paragraphs on their papers were selected for the game of “Jeopardy.” For each paragraph, students formulated one test question based on the stated main idea. Following this game format, the main idea was required to be the answer to their question. The students enjoyed and quickly acquired these skills of self-questioning and prediction, two cognitive strategies that have been shown to increase reading comprehension of informational text (Nolan, 1991).

**TSA Student Practice Sheets.** On-going data from the students’ practice sheets of paragraphs were collected at the end of each lesson. To help students progressively build their knowledge and use of text structure and annotation for comprehension, practice sheets containing the text models were given in the following lesson order: (a) paragraphs with definitions and examples, (b) paragraphs with simple listings, (c) paragraphs with ordered listings, (d) paragraphs with comparison/contrast, and (e) paragraphs with problem/solution and cause/effect (see Appendix M). As new text structure models were introduced in paragraphs, the longer and more complex paragraphs often contained previously learned text structures. For example, a paragraph with a comparison/contrast text structure model could also contain definitions, examples, and listings. Students, thus,
were given practice in annotating multiple structured paragraphs that reinforced the critical reading and thinking skills needed for reading expository text.

Data from these paragraph practice sheets were used in the general course of instruction to help the researcher assess (a) students’ understanding and application of identifying various text structures through the use of annotation, and (b) students’ growth and strength in critical thinking skills as the reading strategy was applied to progressively more complex paragraphs. Practice sheets were sent home with students so that they could review what they had learned and build a portfolio of skill activities.

Lesson Procedures for the VK Group

As with the TSA group, the researcher prepared to give instruction with student copies, highlighters, nonpermanent markers, pencils, an overhead projector, and transparencies shown on a drop-down screen. On the transparencies were the same vocabulary activities as those printed on student copies. For many of the activities, the same paragraphs as those given to the TSA group were used for context clues and structural analysis activities.

The use of transparencies and nonpermanent markers allowed the researcher to explain the thinking processes of understanding vocabulary meaning while doing the following: (a) underlining or circling key words in paragraphs that help determine the meanings of words in sentences, (b) writing answers in fill-in-the-blank sentences for figures of speech, antonyms, and synonyms, (c) writing letters in crossword puzzles, (d) drawing lines for matching prefix to root word or root word to suffix, and (e) completing word maps and vocabulary webs. This format also allowed students to show classmates their individual transparencies after using nonpermanent markers to
draw pictures representing figurative language and to write sentences with antonyms and synonyms. The convenient seating arrangement for the students was the same as for the TSA group. The use of transparencies and student copies encouraged active participation in this reading and writing environment.

For each lesson, attendance was taken while a teacher assistant distributed pencils, transparencies, nonpermanent markers, and student copies of the vocabulary activities. For 40 minutes, the researcher introduced the vocabulary skill for the lesson, used transparencies for examples, and gave students opportunities to use the whiteboard for their own examples. To make the activities more humorous and interesting, the researcher often used students’ names in the sentences printed on the transparencies and on students’ practice sheets.

After the researcher demonstrated how to use the vocabulary skill to aid reading comprehension, students were given practice sheets and pencils in the form of activity packets and divided into groups of two or three. After a five-minute break, students worked together for 40 minutes with the practice sheets that were presented in a game format. The researcher and teacher assistant answered students’ questions and helped them understand and use new vocabulary words. As a whole class activity, new words were connected to familiar words in word maps and vocabulary webs that were drawn on the white board and on transparencies. Students made up sentences using the new words and orally shared them with their peers. After pencils were collected, the remainder of each lesson was spent correcting the student practice sheets. The transparencies were presented with the answers covered, and the answers were shown one at a time. The children were encouraged to give their answers before being shown an answer on the
transparency. They corrected their own papers with colored markers as the transparencies of their copies were shown. When time allowed, students made up sentences with new words, wrote the sentences on individual transparencies, and shared them on the overhead projector and screen with the class.

This lesson format of instruction, along with small group practice, whole class participation with visuals, immediate feedback with correct answers on the transparencies, and class sharing of creative application of new words provided observable positive reinforcement for the VK group. The girls and boys became competitive in completing their vocabulary activity packets correctly and in writing the most colorful sentences with their new words. Thinking of antonyms and synonyms for crossword puzzles was the most noticeable challenge to their vocabulary background and one that they thoroughly enjoyed.

VK Student Practice Sheets. As with the TSA students, on-going data from the VK students’ practice sheets were collected at the end of each lesson. To help students build their knowledge and use of vocabulary meaning for comprehension, the researcher introduced the vocabulary skills in the following lesson order: (a) idioms, metaphors similes, and multiple meanings; (b) antonyms and synonyms; (c) prefixes and roots; (d) analogies and vocabulary webs; and (e) context clues (see Appendix N). The dictionary and thesaurus, crossword puzzles, comic strips, word banks, and vocabulary webs were incorporated throughout the lessons.

The use of various vocabulary strategies to determine word meaning was measured with multiple-choice, matching, and fill-in-the-blank formats, as well as crossword puzzles and open formats for students to generate new words and apply them
in sentences. Data from these materials was used to assess (a) the students’ understanding and application of using various vocabulary strategies to comprehend new word meanings, and (b) students’ growth and strength in using vocabulary skills as a tool for comprehending various presentations of information. As with the TSA participants, practice sheets completed by VK students were sent home with them so that they could review what they had learned and build a portfolio of vocabulary skill activities.

**Structured Informal Observation**

On July 20, during the third lesson for each group in Session 2, the researcher was observed from 10:00 a.m. to noon with the TSA students and from 1:00 p.m. to 3:00 p.m. with the VK students in the classroom setting by two Ph.D. reading professors. Both observers taught in the College of Education at the University of South Florida and have supervised interns out in the field. The purpose of the observation was to assess if the TSA and VK groups received equivalent treatment from the researcher. The observation form was a modification of the *Florida Performance Measurement System Screen/Summative Observation Instrument* developed by the Florida Department of Education Division of Human Resource Development.

In the modified informal observation form, 14 categories assessed the guided practice aspect of direct instruction in the following domains: (a) instructional organization and development, (b) presentation of subject matter, (c) verbal and nonverbal communication, and (d) management of student conduct. The observation form also provided for suggestions, as, for example, the researcher could have included longer and more frequent wait-times for student responses.
Although the observers were not in close proximity to each other and had no eye or verbal contact, they wrote very similar observation comments (see Appendix O). Results of the observations indicated that the TSA and VK groups received equivalent treatment in the following 13 categories: (a) oriented students to lesson content, (b) provided clear directions, (c) emphasized important points, (d) engaged students in interaction and discussion, (e) asked mainly factual questions but included some analysis questions, (f) provided appropriate feedback, (g) recognized and clarified responses, (h) identified challenging items for students, (i) promoted active learning, (j) provided practice for using skills, (k) circulated and assisted students, (l) expressed enthusiasm verbally, and (m) managed classroom behavior appropriately.

Both observers concluded that TSA and VK lessons were mainly lecture using overheads and guided practice, utilized worksheets, had similar seating, and were mainly treated similarly. It is, therefore, reasonable to assume that the extraneous variable of groups receiving unequal treatment was controlled by the researcher, thus, enhancing internal validity of the study.

Posttest and Follow-up Test

In the sixth class of each session, the TSA and VK groups were given the SDRT4, Form K. The Comprehension and Vocabulary components of the test were administered under standardized timed conditions.

On October 1, 2004, two months after the summer reading workshop classes, a brief letter was sent to the 57 participants’ homes. The letter congratulated the students for completing the summer reading sessions and gave the date, time, and location for the follow-up test. At that time of asking for participation in taking the follow-up test,
students did not have information concerning their pretest or posttest scores. It was the researcher’s decision to present the results of the study to parents and students after analysis of all test data. The letter further explained that the purpose of the follow-up test was to measure student retention of the reading skills they had learned. It also emphasized the importance of taking the follow-up test to determine the results and outcome of the study. Included with the letter was a stamped pre-addressed postcard of confirmation to attend the follow-up test. The card, which was to be checked and signed by the student or parent, was to be sent back immediately to the researcher.

On October 23, the SDRT4, Form J was given to the 57 participants from 10:00-11:30 a.m. in the media center of the church school where instruction had been given. The Comprehension and Vocabulary components of the test were administered under standardized timed conditions. Students were given clear directions for properly recording answers and completing erasures on the follow-up test answer documents. In addition, the researcher and teacher assistant checked each student’s follow-up test answers for incomplete erasures, blanks, or improper markings prior to dismissal from the test area. Following the test, students were rewarded with food and drinks for their academic efforts and consistent participation.

A full description of the Standard Diagnostic Reading Test, Fourth Edition (SDRT4) will follow.

Instrument to Measure Vocabulary and Comprehension Key Variables

The primary measure used to collect data was the SDRT4, parallel Forms J and K. Form J, used as the pretest, was administered at the beginning of the study and also served as the follow-up test that was given three months after the last session in the
instructional phase; Form K was administered as the posttest on the last day of class in each session. As previously stated, the tests were administered under standardized timed conditions.

This section will discuss the SDRT4 measurement instrument’s purpose and content, scoring, reliability, validity, and appropriateness for study as reviewed in *The Thirteenth Mental Measurement Yearbook (1998).*

**Purpose and Content**

The SDRT4 is a major revision of the third edition published in 1986. Based on a developmental view of reading as a process, the purpose of this test is to diagnose students’ strengths and weaknesses in four principal components of the reading process: Phonetic Analysis, Vocabulary, Comprehension, and Scanning (Swerdlik & Bucy, 1998). The SDRT4 can also be used to: (a) challenge successful students, as well as give special help to those students lacking basic reading skills; (b) identify trends in reading levels among students in different school districts; (c) obtain information concerning the effectiveness of instructional programs; and (d) measure changes that have occurred over the period of instruction (Engelhard, 1998).

The SDRT4 is composed of six levels for assessing reading skills of students from the end of first grade through the first semester of college. For assessing the reading comprehension of participants in this study, the Comprehension component included the following subtests: (a) Comprehension, (b) Paragraphs with Questions, (c) Recreational Reading, (d) Textual Reading, (e) Functional Reading, (f) Initial Understanding, (g) Interpretation, (h) Critical Analysis, and (i) Reading Strategies. The Vocabulary
component included the following subtests: (a) Reading Vocabulary, (b) Synonyms, (c) Classification, (d) Word Parts, (e) Content Area Words, and (f) Total.

The SDRT4 was chosen as the primary measure to collect data for the study for several reasons. First, the SDRT4’s format is similar to the approach used on many standardized achievement tests and in activities and assignments in many reading classes (Nolan, 1991). Second, the SDRT4, primarily developed for use with low achieving students, contains a greater number of easier questions as compared to the general reading achievement tests questions. The difficult questions are scattered throughout the test and “padded” by easier items, before and after, to reduce the frustration level experienced by low achieving students (Engelhard, 1998). Taking this into consideration, the researcher and three teachers examined the Comprehension and Vocabulary components for item difficulty at the SDRT4 Purple Level (Grades 4.5 – 6.5), Forms J and K, and determined this level appropriate for the students participating in this study.

Reliability

The researcher and two reading professors examined the SDRT4, Forms J and K for bias, the number of test items, and ambiguous questions or clues that could have threatened reliability of the scores. It was determined that the SDRT4 tests were appropriate for the participants in the study. According to reviews of the SDRT4 in The Thirteenth Mental Measurement Yearbook (1998), the content of the SDRT4 was examined for bias by an advisory group of nine minority educators. Each item was reviewed and either revised or eliminated if it contained ethnic, gender, socioeconomic, cultural or regional bias, or stereotyping (Swerdlik & Bucy, 1998).
In a review of the reliability of scores on the SDRT4, Engelhard (1998) reported that estimates are given for Kuder Richardson Formula #20 (KR20) and Kuder Richardson #21 (KR21), alternate-form reliability, and standard errors of measurement for the fall and spring standardization samples. KR20 coefficients are between .95 and .98 for the total scores. The KR21 coefficients are comparable. The SDRT4 subtest and total scores are sufficiently reliable to identify particular domains of reading strengths and weaknesses (Swerdlik & Bucy, 1998). Some of the KR21 coefficients for the subtests are below .85 due to the small number of items in the clusters. The alternate-form (Form K) reliability coefficients for the components are between .86 to .88 for the total scores.

For the current study, the Cronbach’s alpha coefficient for reliability was used to analyze internal consistency of the pretest, posttest, and follow-up test. For Comprehension scores, the alpha coefficients showed a high level of internal consistency and fell within the KR20 and KR21 coefficient ranges. For Vocabulary scores, the coefficients showed a moderate to high level of internal consistency and fell within the KR20 and KR21 coefficient ranges. The KR20, KR21, and Cronbach’s alpha reliability coefficients are shown in Table 1.
<table>
<thead>
<tr>
<th></th>
<th>Total scores</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KR20, KR21</td>
<td>Cronbach’s alpha</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(n = 57)</td>
<td></td>
</tr>
<tr>
<td><strong>Vocabulary</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>.79-.94</td>
<td>.722</td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>.62-.82</td>
<td>.620</td>
<td></td>
</tr>
<tr>
<td>Follow-up</td>
<td>.79-.94</td>
<td>.829</td>
<td></td>
</tr>
<tr>
<td><strong>Comprehension</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>.79-.94</td>
<td>.879</td>
<td></td>
</tr>
<tr>
<td>Posttest</td>
<td>.62-.82</td>
<td>.911</td>
<td></td>
</tr>
<tr>
<td>Follow-up</td>
<td>.79-.94</td>
<td>.932</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** The Cronbach alphas were derived from the current study.

**Validity**

Regarding face validity of the SDRT4, the researcher and two reading professors, including Reese (1988) who is cited in this proposal, analyzed independently the passages and questions on the Comprehension component subtests and Vocabulary component subtests. The analysis (a) determined the number of expository passages, the types of top-level expository text structure in the passages, and whether the test items covered the content which the test intends to measure (Nevo, 1985), and (b) established
the sensitivity of the dependent measures to the skills-strategies in the training (Reese, 1988).

Pertaining to the content-related validity of the SDRT4, Engelhard (1998) found (a) clear and specific descriptions of the objectives and items, (b) clear and detailed instructions for test administration, (c) sufficient information to allow users of this instrument to make decisions regarding its appropriateness for their intended uses, (d) correlations of SDRT4 scores with the Otis-Lennon School Ability Test, Sixth Edition and the SDRT3, and (e) intercorrelations of subtest and total scores within the SDRT4.

Evidence of the construct validity of the SDRT4 is provided by moderate correlations between the subtests and the Otis-Lennon School Ability Test, Sixth Edition (Swerdlik & Bucy, 1998).

**Appropriateness for Study**

Although limitations to the SDRT4 exist, this measurement instrument is most useful for teachers and reading specialists who plan to evaluate large numbers of students and need to evaluate the effectiveness of instructional programs (Swerdlik & Bucy, 1998). The SDRT4 was most appropriate for this study that assessed the effectiveness of an instructional program on 57 participants. According to Engelhard (1998), this measurement instrument “reflects sound professional test development, administration, and scoring strategies, and appears to offer a useful measure of reading” (p. 294). The researcher, therefore, chose to administer the SDRT4, Forms J and K in the current study to determine (a) if the method of teaching text structure with annotation produced higher comprehension scores than the method of teaching vocabulary to pre-fourth-grade
readers, (b) if the method of teaching text structure with annotation produced higher vocabulary scores than the method of teaching vocabulary to pre-fourth-grade readers, (c) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension was the same for male and female students, and (d) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth-graders’ vocabulary was the same for male and female students.

The 57 participants’ NCE Comprehension and Vocabulary scores from the posttest and follow-up test were compared to determine if the effect of the treatment was enhanced, remained the same, or diminished over time (Bracht & Glass, 1968). A 2 (Instructional Method) X 2 (Gender) analysis of covariance (ANCOVA) was subsequently applied to the post-treatment data using the pretest NCE scores as the covariate and testing for significance at the .05 level.

**Summary**

In April 2004, 87 pre-fourth graders (48 girls and 39 boys) from 14 local private schools were pretested on the SDRT4, Form J. They were assigned to one of two 3-week summer sessions, ranked and matched on the Comprehension component of the pretest, and randomly assigned to the treatment (TSA) and comparison (VK) groups. Seventeen students withdrew from the study prior to the start of instruction and 13 students withdrew during the sessions of instruction, thereby reducing the sample size used in this study (n = 57).

The design of the study was a quantitative true experiment using a matched comparison-group format. The manipulated independent variable was the type of instruction with two conditions: (a) training in top-level expository text structure through
the use of annotation textmarking, and (b) training in vocabulary acquisition and development. The continuous dependent variables were students’ posttest performance on the Comprehension and Vocabulary components of the SDRT4, Form K (immediate posttest) and Form J (follow-up test).

The TSA and VK groups each received 10 hours of direct and explicit instruction in workshop settings. Materials used in each group included a rich variety of visual organizers and paragraph excerpts from their schools’ fourth-grade science and social studies texts to make learning more meaningful and enhance reading comprehension.

A structured informal observation was conducted during one lesson for each group. The extraneous variable of groups receiving unequivalent treatment was controlled by the researcher, thus enhancing internal validity of the study.

On the last day in each session, the TSA and VK groups were given the posttest SDRT4 (Form K); two months later, the follow-up test (Form J) was administered. As attendance records had been kept, the results of applying ANCOVA to the data determined that attendance was not related to performance.

**Overview**

Chapter Four, Results, discusses the research design and analysis of the data. Chapter Five discusses a summary of the problem, purpose of the study, research questions, hypothesis, methodology, results, conclusions and implications, limitations of the study, recommendations for future research, and contributions.
CHAPTER FOUR
RESULTS

There are different views on how reading comprehension, particularly with expository text, can be improved. One perspective is that reading comprehension can be enhanced through the instructional strategy of identifying expository text structure and using annotation. Another view is that reading comprehension can be strengthened through familiarity with terminology and vocabulary used in the text.

The purposes of this study were to determine (a) if the method of teaching text structure with annotation produced higher reading comprehension scores than the method of teaching vocabulary to pre-fourth-grade readers, (b) if the method of teaching text structure with annotation produced higher reading vocabulary scores than the method of teaching vocabulary to pre-fourth-grade readers, (c) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension was the same for male and female students, and (d) if the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary was the same for male and female students.

The following questions were examined:

1. Does the method of teaching expository text structure with annotation produce higher reading comprehension scores than the method of teaching vocabulary to pre-fourth graders, as measured by the SDRT4?
Does the method of teaching expository text structure with annotation produce higher vocabulary scores than the method of teaching vocabulary to pre-fourth graders, as measured by the SDRT4?

To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension the same for male and female students?

To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary the same for male and female students?

It was hypothesized that after three weeks of instruction in either test structure with annotation or vocabulary, scores on the immediate posttest and follow-up test on the Comprehension component of the SDRT4 would be higher for the pre-fourth-grade students in the Text Structure condition than the pre-fourth-grade students in the Vocabulary Knowledge condition.

Vocabulary scores were collected and compared for the two groups. There was no hypothesis formulated or directed at this variable. In addition, there was no hypothesis specified for the potential differential effects of instruction for male and female students.

**Research Design**

Eighty-seven students volunteered to participate in one of two three-week instructional sessions beginning on June 22 and July 13, 2004. They were matched on NCE scores of the Comprehension component of the pretest SDRT4 Form J, and randomly assigned to the Text Structure (TSA) or Vocabulary Knowledge (VK) instruction conditions. The TSA group consisted of 43 students (24 students in Session 1;
19 students in Session 2); the VK group had 44 students (22 students in Session 1; 22 students in Session 2).

Six students withdrew from the study prior to the start of instruction in Session 1, and 11 students withdrew prior to Session 2. Session 1 began, therefore, with 22 TSA and 18 VK participants; Session 2 began with 13 TSA and 17 VK students. Eight students did not complete Session 1 and two students did not attend the posttest, thereby leaving a total of 30 participants in Session 1 (15 TSA students and 15 VK students). Three students withdrew during Session 2 leaving a total of 27 participants (12 TSA students and 15 VK students).

Vocabulary and comprehension scores on the posttest and follow-up test were obtained from these 57 students’ multiple-choice responses to the SDRT4. Vocabulary and comprehension achievement were measured immediately after each three-week period of instruction and then two months later (follow-up test) following Session 2. Treatment effects on vocabulary and comprehension achievement on the posttest and follow-up test were analyzed using two 2 (Method) X 2 (Gender) analyses of covariance (ANCOVA) of the posttest and follow-up test with the pretest as the covariate (e.g., pretest reading comprehension was the covariate when the outcome was reading comprehension; pretest vocabulary was the covariate when vocabulary was the outcome). The method of instruction factor had two levels— the TSA group and the VK group; the gender factor had two levels— males and females. A two-way ANCOVA was used to control for initial differences between the TSA and VK groups’ performance on the pretest, and to reduce the amount of extraneous variance while testing the significance of the difference between the groups on the posttest. ANCOVA increases the power of the
statistical test when compared to an ANOVA. Underlying assumptions of normality, homogeneity of variance, linearity, and homogeneity of regression were satisfactory for applying the ANCOVA to the data. As shown in Table 2, scores were approximately normally distributed fairly, with skewness scores ranging from –0.51 (VK group, Vocabulary follow-up test) to 0.82 (TSA group, Comprehension posttest) and kurtosis scores ranging from -0.86 (TSA group, Comprehension pretest) to 0.64 (TSA group, Comprehension posttest).

Table 2

Means, Standard Deviations, Skewness, and Kurtosis of the Vocabulary Group (VK) and Text Structure Group (TSA)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>VK (n = 30)</th>
<th>TSA (n = 27)</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voc. Pretest: Time 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>42.55</td>
<td>43.35</td>
<td>41.74</td>
<td>0.09</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>17.00</td>
<td>14.61</td>
<td>19.29</td>
<td></td>
</tr>
<tr>
<td>Skewness</td>
<td>0.09</td>
<td>0.01</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.20</td>
<td>-0.20</td>
<td>-0.36</td>
<td></td>
</tr>
<tr>
<td><strong>Voc. Posttest: Time 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>48.33</td>
<td>49.24</td>
<td>47.31</td>
<td>0.14</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>14.00</td>
<td>11.77</td>
<td>16.22</td>
<td></td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.54</td>
<td>0.40</td>
<td>-0.15</td>
<td></td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.24</td>
<td>-0.70</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voc. Follow-up Test: Time 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Skewness</td>
<td>Kurtosis</td>
</tr>
<tr>
<td>Voc. Follow-up</td>
<td>59.71</td>
<td>18.65</td>
<td>-0.49</td>
<td>0.11</td>
</tr>
<tr>
<td>Test: Time 3</td>
<td>61.61</td>
<td>18.74</td>
<td>-0.51</td>
<td>0.57</td>
</tr>
<tr>
<td></td>
<td>57.60</td>
<td>18.67</td>
<td>-0.52</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Pretest:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Skewness</td>
<td>Kurtosis</td>
</tr>
<tr>
<td></td>
<td>45.30</td>
<td>17.50</td>
<td>0.01</td>
<td>-0.83</td>
</tr>
<tr>
<td></td>
<td>45.93</td>
<td>17.29</td>
<td>-0.20</td>
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</tr>
<tr>
<td></td>
<td>44.67</td>
<td>17.91</td>
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</tr>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Comp. Posttest:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Skewness</td>
<td>Kurtosis</td>
</tr>
<tr>
<td></td>
<td>45.55</td>
<td>19.01</td>
<td>0.22</td>
<td>-0.16</td>
</tr>
<tr>
<td></td>
<td>45.22</td>
<td>18.93</td>
<td>-0.35</td>
<td>-0.84</td>
</tr>
<tr>
<td></td>
<td>45.92</td>
<td>19.54</td>
<td>0.82</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comp. Follow-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test: Time 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Skewness</td>
<td>Kurtosis</td>
</tr>
<tr>
<td></td>
<td>49.52</td>
<td>21.21</td>
<td>-0.15</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>49.94</td>
<td>18.80</td>
<td>-0.43</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td>49.06</td>
<td>23.97</td>
<td>0.03</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Table 2 shows that the total mean scores of the VK group and TSA group, measured at the three time points (pretest, posttest, and follow-up), were very similar on both the Vocabulary components and Comprehension components of the SDRT4. Point differences between the means of the VK and TSA groups ranged from 0.70 (Comprehension posttest) to 4.01 (Vocabulary follow-up test). The VK group’s mean scores were slightly higher on the Vocabulary and Comprehension components tested at the three time points, with the exception of the Comprehension posttest on which the VK group scored 0.70 below the mean of the TSA group (45.92). In looking at the data, the mean scores for both the VK and TSA groups fell below the NCE mean score of 50 on all tests (approximately one half or less of a standard deviation below the mean), except for the Vocabulary follow-up test. For both groups, the mean scores on the Vocabulary follow-up were higher than the NCE mean score. The VK group (61.61) fell within approximately 0.60 of a standard deviation above the mean, while the TSA group (57.60) was within 0.40 of a standard deviation above the mean. Calculations indicated a small effect size for the Vocabulary and Comprehension tests at all three time points. Effect sizes ranged from –0.04 (Comprehension posttest) to 0.21 (Vocabulary follow-up test).

Evaluating the Equivalence of the Groups at the Beginning of the Study

The first step in analyzing the data was to determine if the TSA and VK groups were similar at the beginning of the study. The Text Structure Annotation group (TSA) and the Vocabulary Knowledge group (VK) were compared on gender, date of birth, and pretest scores of comprehension and vocabulary. Comparisons were made at each session.
The Pearson Chi-Square test was used to determine the statistical significance of the difference between the groups (combined for the two sessions) on the demographic variable of gender ($p$ level set at .05). No statistically significant difference was found for gender, $\chi^2(1, n = 57) = 0.675, p > .05$. Comparisons of the gender composition of the TSA and VK groups at each session indicated that at Session 1, the TSA and VK groups did not significantly differ on gender, $\chi^2(1, N = 30) = 0.143, p > .05$, nor at Session 2, $\chi^2(1, N = 27) = 0.381, p > .05$.

The TSA and VK groups, combined for the two sessions, were compared on date of birth using an independent $t$-test ($p$ level set at .05). No statistically significant difference was found, $t(54) = 0.427, p > .05$. Comparisons of the age composition of the TSA and VK groups at each session indicated that at Session 1, the TSA and VK groups did not differ on age, $t(28) = 1.0, p > .05$, nor at Session 2, $t(24) = 0.275, p > .05$.

Pretest scores on the Vocabulary and Comprehension components of the SDRT4 were also used to determine if the groups were similar at the beginning of the study. Pretest scores for the Vocabulary and Comprehension components were tested for significant differences between the conditions. A $t$-test for equality of means was completed for vocabulary and comprehension measures at pretest to evaluate differences in the means of the TSA condition and VK condition prior to instruction. No statistically significant differences were found for vocabulary, $t(55) = 0.979, p > .05$, or for comprehension, $t(55) = 0.576, p > .05$. Pretest scores of the Vocabulary and Comprehension components were compared for each session by using an independent $t$-test with $p$ level set at .05. At Session 1, no significant differences were found for vocabulary, $t(28) = 0.728, p > .05$, or comprehension, $t(28) = 0.759, p > .05$. At
Session 2, significant differences were not found for vocabulary, \( t(25) = 0.716, p > .05 \),
or for comprehension, \( t(28) = 0.564, p > .05 \).

At the beginning of the study there were no significant differences in gender, age,
or pretest scores for vocabulary and comprehension at Sessions 1 and 2. Session 1 and
Session 2, therefore, were combined so that the larger sample size would provide greater
statistical power. The VK group was comprised of 14 males and 16 females; the TSA
group consisted of 12 males and 15 females.

**Pearson Correlations for Reading Comprehension and Vocabulary**

Correlations between vocabulary and comprehension scores measured at the three
time points (pretest, posttest, follow-up) are reported in Table 3. The Pearson correlations
indicate strong positive relationships between vocabulary and comprehension at each
time point (all \( ps < .05 \)). Correlations between vocabulary and comprehension at pretest,
posttest, and follow-up test were .69, .58, and .68 respectively. Since the pretest was used
as a covariate, the correlations between the pretest scores, posttest scores, and follow-up
scores were calculated for vocabulary and comprehension. For vocabulary, the pretest
correlated .72 with the posttest and .57 for follow-up. For comprehension, the pretest
correlated .67 with the posttest and .77 for follow-up.
Table 3

Correlations Between Pretest, Posttest, and Follow-up Test Measures on the SDRT4.

Forms J and K

<table>
<thead>
<tr>
<th>Measure</th>
<th>Voc. Pre</th>
<th>Voc. Post</th>
<th>Voc. Follow-up</th>
<th>Comp. Pre</th>
<th>Comp. Post</th>
<th>Comp. Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students (n = 57)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Voc. pre</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Voc. post</td>
<td>.72</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Voc follow-up</td>
<td>.57</td>
<td>.68</td>
<td>- -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Comp pre</td>
<td>.69</td>
<td>.72</td>
<td>.71</td>
<td>- -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Comp post</td>
<td>.51</td>
<td>.58</td>
<td>.49</td>
<td>.67</td>
<td>- -</td>
<td></td>
</tr>
<tr>
<td>6. Comp follow-up</td>
<td>.62</td>
<td>.69</td>
<td>.67</td>
<td>.77</td>
<td>.61</td>
<td>- -</td>
</tr>
</tbody>
</table>

Note. All correlations at the .01 level (2-tailed) were statistically significant. Voc. = vocabulary. Comp. = comprehension.

Analysis of Covariance for Vocabulary

Vocabulary Posttest. The next step in analyzing the posttest data was to compute descriptive statistics. For the Vocabulary posttest, gender and method of instruction were used to define four cells: (a) males, VK; (b) females, VK; (c) males, TSA; and (d) females, TSA. Unadjusted mean scores, standard deviations, adjusted mean scores, skewness, and kurtosis are shown in Table 4. Values for skewness and kurtosis indicated that the scores on the Vocabulary posttest were approximately normally distributed. Skewness values ranged from −0.42 (TSA male group) to 0.66 (VK female group). The kurtosis values ranged from −0.88 (VK males) to 0.62 (TSA females).
Table 4

Unadjusted Means, Standard Deviations, Adjusted Means, Skewness, and Kurtosis on the
Vocabulary Posttest of the SDRT4, Form K

<table>
<thead>
<tr>
<th>Variable</th>
<th>Males (n = 14)</th>
<th>Females (n = 16)</th>
<th>Males (n = 12)</th>
<th>Females (n = 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary Knowledge (VK)</td>
<td>50.09</td>
<td>12.43</td>
<td>48.35</td>
<td>0.21</td>
</tr>
<tr>
<td>Text Structure (TSA)</td>
<td>48.40</td>
<td>11.45</td>
<td>50.20</td>
<td>0.66</td>
</tr>
</tbody>
</table>

Note. ADJ. M = Adjusted Mean provided from the Analysis of Covariance for Vocabulary Knowledge, Pretest Vocabulary was used as the covariate.

Table 4 shows the differences in the means for the VK and TSA groups for males and females. Looking at the adjusted means for males in the VK group (48.35) versus the adjusted means for males in the TSA group (42.47), there was a 5.88 point difference favoring vocabulary instruction. In contrast, for females there was very little difference between the adjusted means for vocabulary instruction (50.20) and text structure with annotation instruction (51.11). Based on the analysis of covariance, the adjusted means on the Vocabulary posttest for VK males was 1.85 lower than VK females who scored 50.20, slightly higher than the NCE mean score of 50. With the standard deviation of the NCE mean being 21.06, the VK male group fell within approximately 0.08 of a standard deviation below the mean. The largest difference was in the TSA group, in which TSA females scored higher with a mean score of 51.11 compared to the male mean score of 42.47. The standard deviations for the VK group were around 12, while the standard deviations for the TSA group were around 15.
In order to test whether the adjusted means were statistically significant, a 2 (Method) X 2 (Gender) ANCOVA was used and is summarized in Table 5.

**Table 5**

**Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Vocabulary Posttest Scores With Pretest Vocabulary as a Covariate**

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>1</td>
<td>5424.953</td>
<td>5424.953</td>
<td>61.008</td>
<td>.000</td>
</tr>
<tr>
<td>Method (M)</td>
<td>1</td>
<td>87.090</td>
<td>87.090</td>
<td>0.979</td>
<td>.327</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>1</td>
<td>387.823</td>
<td>387.823</td>
<td>4.361</td>
<td>.042</td>
</tr>
<tr>
<td>M X G</td>
<td>1</td>
<td>159.401</td>
<td>159.401</td>
<td>1.793</td>
<td>.186</td>
</tr>
</tbody>
</table>

Results of the 2 (Method) X 2 (Gender) ANCOVA indicated that on the Vocabulary posttest, the factor of Gender was statistically significant with females statistically higher than males, \( F(1,57) = 4.361, p < .05 \). On the Vocabulary posttest, the factor of Method was not significant, \( F(1,57) = 0.979, p > .05 \), and the interaction of Method X Gender was not significant, \( F(1,57) = 1.793, p > .05 \). An interaction graph is provided in Figure 1 to show the relative positions of the adjusted means on the Vocabulary component of the posttest.

**Vocabulary Follow-up Test.** Two months following the Session 2 posttest, a follow-up test (SDRT4 Form J) was given to the 57 participants. Vocabulary and comprehension scores were obtained from their multiple-choice responses on the parallel test. For the Vocabulary follow-up test, gender and method of instruction were
used to define four cells: (a) males, VK; (b) females, VK; (c) males, TSA; and (d) females, TSA. Unadjusted mean scores, standard deviations, adjusted mean scores, skewness, and kurtosis are shown in Table 6. Values for skewness and kurtosis indicated that the scores on the Vocabulary follow-up test were approximately normally distributed. Skewness values ranged from –0.99 (VK female group) to –0.15 (VK male group). The kurtosis values ranged from –0.30 (TSA females) to 0.47 (VK males).

Table 6

Unadjusted Means, Standard Deviations, Adjusted Means, Skewness, and Kurtosis on the Vocabulary Follow-up Test of the SDRT4, Form J

<table>
<thead>
<tr>
<th>Variable</th>
<th>Vocabulary Knowledge (VK) (n = 30)</th>
<th>Text Structure (TSA) (n = 27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males (n = 14)</td>
<td>66.54</td>
<td>18.17</td>
</tr>
<tr>
<td>Females (n = 16)</td>
<td>56.69</td>
<td>18.59</td>
</tr>
</tbody>
</table>

Note. ADJ. M = Adjusted Mean provided from the Analysis of Covariance for Vocabulary Knowledge, Pretest Vocabulary was used as the covariate.

Table 6 shows the differences in the means for the VK and TSA groups for the males and females. Based on the analysis of covariance, males and females in both the VK and TSA groups scored higher than the NCE mean score of 50. In comparing the adjusted means for VK males (64.79) versus the adjusted means for TSA males (50.85), there was a relatively large 13.94 point difference. In contrast, there was for females a 4.42 point difference between the adjusted means for the VK group (58.51) and the TSA group (62.93). The adjusted means on the Vocabulary follow-up test for VK males was
6.28 higher than the VK females who scored 58.51. With the standard deviation of the NCE mean being 21.06, the VK male group was approximately 0.04 of a standard deviation above the mean, and the VK female group was approximately 0.70 of a standard deviation above the mean.

The largest difference was in the TSA group, in which the adjusted means for females was 12.08 higher than males who scored 50.85, slightly above the NCE mean. The TSA female group was approximately a little more than one half of a standard deviation above the mean. In order to test whether the adjusted means were statistically significant, a 2 (Method) X 2 (Gender) ANCOVA was used as summarized in Table 7.

Table 7

Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Vocabulary Follow-up Test Scores With Pretest Vocabulary as a Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>1</td>
<td>5534.981</td>
<td>5534.981</td>
<td>24.797</td>
<td>.000</td>
</tr>
<tr>
<td>Method (M)</td>
<td>1</td>
<td>318.954</td>
<td>318.954</td>
<td>1.429</td>
<td>.237</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>1</td>
<td>118.636</td>
<td>118.636</td>
<td>0.531</td>
<td>.469</td>
</tr>
<tr>
<td>M X G</td>
<td>1</td>
<td>1165.287</td>
<td>1165.287</td>
<td>5.221</td>
<td>.026</td>
</tr>
</tbody>
</table>

Results of the 2 (Method) X 2 (Gender) ANCOVA indicated that on the Vocabulary follow-up test, the factor of Method, $F(1,57) = 0.237$, $p > .05$, and the factor of Gender, $F(1,57) = 0.469$, $p > .05$, were not statistically significant. The interaction of Method X Gender, however, was statistically significant, $F(1,57) = 0.026$, $p < .05$, with
males benefiting more from vocabulary instruction than instruction in text structure with annotation. An interaction graph is provided in Figure 1 to show the relative positions of the adjusted means on the Vocabulary component of the follow-up test.

**Comprehension Posttest.** For the Comprehension posttest, gender and method of instruction were used to define four cells: (a) males, VK; (b) females, VK; (c) males, TSA; and (d) females, TSA. Unadjusted mean scores, standard deviations, adjusted mean scores, skewness, and kurtosis are shown in Table 8. Values for skewness and kurtosis indicated that the scores on the vocabulary posttest were approximately normally distributed. Skewness values ranged from –0.48 (VK female group) to 0.47 (TSA female group). The kurtosis values ranged from –1.26 (VK male group) to –0.14 (VK female group).

Table 8

<table>
<thead>
<tr>
<th>Variable</th>
<th>Vocabulary Knowledge (VK) (n = 30)</th>
<th>Text Structure (TSA) (n = 27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>40.67</td>
<td>19.90</td>
</tr>
<tr>
<td>Females</td>
<td>49.79</td>
<td>17.38</td>
</tr>
</tbody>
</table>

**Note.** ADJ. M = Adjusted Mean provided from the Analysis of Covariance for Vocabulary Knowledge, Pretest Vocabulary was used as the covariate.

Regarding the adjusted means for VK males (39.99) and TSA males (39.34), there was very little point difference between the two groups, both of which were
approximately one half of a standard deviation below the NCE mean of 50. In contrast, there was a 3.44 point difference between the VK females (49.60) and the TSA females (53.04). Based on the analysis of covariance, the adjusted means on the Comprehension posttest for VK females was 9.61 higher than the VK males who scored 39.99, which was 10.01 points below the NCE mean score of 50. The adjusted means for TSA females was 13.70 higher than TSA males (39.34).

A 2 (Method) X 2 (Gender) ANCOVA, summarized in Table 9, was used to test whether the adjusted means were statistically significant.

Table 9
Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Comprehension Posttest Scores With Pretest Comprehension as a Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>1</td>
<td>9515.789</td>
<td>9515.789</td>
<td>55.440</td>
<td>.000</td>
</tr>
<tr>
<td>Method (M)</td>
<td>1</td>
<td>50.541</td>
<td>50.501</td>
<td>0.294</td>
<td>.590</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>1</td>
<td>2083.305</td>
<td>2083.305</td>
<td>12.138</td>
<td>.001</td>
</tr>
<tr>
<td>M X G</td>
<td>1</td>
<td>33.616</td>
<td>33.616</td>
<td>0.196</td>
<td>.660</td>
</tr>
</tbody>
</table>

Results of a 2 (Method) X 2 (Gender) ANCOVA indicated that on the Comprehension posttest, Gender was statistically significant with females scoring significantly higher than males, $F(1,57) = 12.138, p < .05$. On the Comprehension posttest, the factor of Method was not significant, $F(1,57) = 0.294, p > .05$, and the interaction of Method X Gender was not significant, $F(1,57) = 0.196, p > .05$. An
interaction graph is provided in Figure 1 to show the relative positions of the adjusted means on the Comprehension component of the posttest.

**Comprehension Follow-up Test.** For the Comprehension follow-up test, gender and method of instruction were used to define four cells: (a) males, VK; (b) females, VK; (c) males, TSA; and (d) females, TSA. Unadjusted mean scores, standard deviations, adjusted mean scores, skewness, and kurtosis are shown in Table 10. Values for skewness and kurtosis indicate that the scores on the Vocabulary posttest were approximately normally distributed. Skewness values ranged from –0.57 (VK male group) to 0.35 (TSA male group). The kurtosis values ranged from –0.95 (VK females) to 1.27 (TSA females).

Table 10

<table>
<thead>
<tr>
<th>Variable</th>
<th>Vocabulary Knowledge (VK) (n = 30)</th>
<th>Text Structure (TSA) (n = 27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males (n = 14)</td>
<td>50.22</td>
<td>22.02</td>
</tr>
<tr>
<td>Females (n = 16)</td>
<td>49.67</td>
<td>15.71</td>
</tr>
</tbody>
</table>

Note. ADJ. M = Adjusted Mean provided from the Analysis of Covariance for Vocabulary Knowledge, Pretest Vocabulary was used as the covariate.

Table 10 shows the differences in means for the VK and TSA groups for the males and females. Based on the analysis of covariance, males (48.12) and females (49.42) in the VK group scored slightly lower than the NCE mean of 50. In comparing the adjusted means, the VK females scored a small point difference of 1.30 higher than
the VK males. Both males and females in the VK group were approximately within one-sixteenth of a standard deviation below the mean. In contrast, there was a 9.33 point difference between the TSA males (45.17) and TSA females (54.50). TSA males scored 4.83 below the NCE mean and were approximately one fourth of a standard deviation below the mean. TSA females scored 4.50 above the NCE mean and were approximately one fourth of a standard deviation above the mean.

A 2 (Method) X 2 (Gender) ANCOVA, summarized in Table 11 was used to test whether the adjusted means were statistically significant.

Table 11

Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Comprehension

Follow-up Test Scores With Pretest Comprehension as a Covariate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>1</td>
<td>14952.175</td>
<td>14952.174</td>
<td>80.575</td>
<td>.000</td>
</tr>
<tr>
<td>Method (M)</td>
<td>1</td>
<td>15.867</td>
<td>15.867</td>
<td>0.081</td>
<td>.771</td>
</tr>
<tr>
<td>Gender (G)</td>
<td>1</td>
<td>397.824</td>
<td>397.824</td>
<td>2.144</td>
<td>.149</td>
</tr>
<tr>
<td>M X G</td>
<td>1</td>
<td>227.122</td>
<td>227.122</td>
<td>1.224</td>
<td>.274</td>
</tr>
</tbody>
</table>

Results of the 2 (Method) X 2 (Gender) ANCOVA indicated that on the Comprehension follow-up test, there were no statistically significant differences for the factors of Method, $F(1,57) = 0.086$, $p > .05$, and Gender, $F(1,57) = 2.144$, $p > .05$. Also, there was no statistically significant difference for the interaction of Method X Gender,
$F(1,57) = 1.224, p > .05$. An interaction graph is provided in Figure 1 to show the relative positions of the adjusted means on the Comprehension component of the follow-up test.

A summary of statistically significant results of the 2 (Method) X 2 (Gender) Analysis of Covariance of Vocabulary and Comprehension posttest and follow-up scores is shown in Table 12. Pretest Vocabulary was the covariate when the outcome was vocabulary; pretest Comprehension was the covariate when the outcome was comprehension.

Table 12

Summary Table of 2 (Method) X 2 (Gender) Analysis of Covariance of Comprehension and Vocabulary Posttest and Follow-up Test Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>Vocabulary Posttest</th>
<th>Vocabulary Follow-up</th>
<th>Comprehension Posttest</th>
<th>Comprehension Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Gender</td>
<td>.042*</td>
<td>NS</td>
<td>.001**</td>
<td>NS</td>
</tr>
<tr>
<td>M X G</td>
<td>NS</td>
<td>.026*</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

* $p < .05$. ** $p < .01$. NS = not statistically significant ($p > .05$)

Summary

This chapter has reported the results of an analysis of covariance conducted on post-treatment and follow-up treatment data relevant to the research hypothesis regarding the effect of training in expository text structure through the use of annotation versus the
effect of training in vocabulary knowledge on the reading comprehension of pre-fourth graders \((n = 57)\).

It was hypothesized that after three weeks of instruction in either text structure with annotation or vocabulary, the scores on the immediate posttest (Form K) and the follow-up test (Form J) on the Comprehension component of the SDRT4 would be higher for the pre-fourth-grade students in the Text Structure Annotation group (TSA) than the pre-fourth graders in the Vocabulary Knowledge group (VK).

The hypothesis was not supported by the results of the ANCOVA, which used the posttest and follow-up test scores of the SDRT4, Forms J and K, respectively, as the dependent variables. The analysis of the data indicated the following results:

1. At the beginning of the study, there were no significant differences in gender, age, or pretest scores for vocabulary and comprehension at Session 1 and 2.

2. The scores on the immediate posttest (Form K) and the follow-up test (Form J) on the Comprehension component of the SDRT4 were not statistically significantly higher for the pre-fourth-grade students in the Text Structure Annotation group than the pre-fourth graders in the Vocabulary Knowledge group.

3. The total mean scores of the Vocabulary Knowledge and the Text Structure Annotation group, measured at three time points (pretest, posttest, and follow-up test), were very similar on both the Vocabulary components and Comprehension components of the SDRT4. The effect sizes were small, ranging from \(-0.04\) (Comprehension posttest) to 0.21 (Vocabulary follow-up test).

4. The mean scores for both the VK and TSA groups fell below the NCE mean score of 50 on all tests, except for the Vocabulary follow-up test on which the mean
scores on the Vocabulary follow-up for both groups were higher than the NCE mean score.

5. Correlations between vocabulary and comprehension at the pretest, posttest, and follow-up test showed strong positive relationships between vocabulary and comprehension at each time point.

6. The factor of Gender was statistically significant on the Vocabulary posttest, with females scoring statistically higher than males.

7. The factor of Gender was statistically significant on the Comprehension posttest, with females scoring statistically higher than males.

8. The interaction of Method X Gender was statistically significant on the Vocabulary follow-up test, with males benefiting more from vocabulary instruction than instruction in text structure.

**Overview**

The following chapter, Chapter Five, discusses a summary of the problem, purpose of the study, research questions, hypothesis, methodology, results, conclusions and implications, limitations of the study, recommendations for future research, and contributions.
Figure 1. The interaction of treatment effects and gender adjusted mean scores on the Vocabulary and Comprehension components of the SDRT4 Posttest and Follow-up Test. ES = Effect Size.
CHAPTER FIVE
SUMMARY AND DISCUSSION

The following sections in this chapter include: (a) a summary of the problem, purposes of the study, research questions, hypothesis, methodology, and results; (b) a discussion of conclusions and implications; (c) limitations of the study; (d) recommendations for future research; and (e) contributions.

The Problem and Its Significance

An abundance of research warns educators that the majority of students, regardless of grade level, are not proficient in learning from content area textbooks. The primary purpose of these textbooks is to provide information, yet even fluent readers who have mastered the mechanics of reading have difficulty comprehending expository text. Children are required independently to “read to learn”-- to absorb the information in content area texts such as science and social studies-- and later retrieve that information for tests or exams. This is a very difficult task for children (Goodman & Mann, 1976).

Comprehending informational books is difficult for students for several reasons. As opposed to narrative prose which follows a familiar story line with a beginning, middle, and end, expository prose is riveted with facts, theories, names, and dates. This information, largely unfamiliar to the reader (Cook, 1983), can require also the more sophisticated reading skills of making inferences and drawing conclusions.
A second critical factor contributing to comprehension difficulty is the structure of expository text which differs greatly from narrative text. Expository information is presented in hierarchical order within the various forms of text structure. Most students, particularly children in the elementary grades, are not aware of the different types of text structure, and this unawareness obstructs their comprehension. They cannot identify the “skeleton” of the paragraph-- the author’s most important information-- from the trivia or repetitive phrases or sentences. They lack knowledge of how main ideas are developed through the author’s use of definitions and examples, listings, ordered listings, comparison and contrast, problem and solution, and cause and effect. Consequently, these readers typically resort to memorizing all the information they possibly can, or they perceive the task as one so obviously futile that they simply close the book. Unless these students have prior knowledge or experience about the new information that is to be read in preparation for a test or exam, they are likely to be set up for failure.

A third important reason why comprehending content area books is difficult for students is that expository text is rich with technical vocabulary, the words that are specific to the content area. Comprehension depends on readers’ prior knowledge of the topic, and their familiarity with the terminology and vocabulary introduced in the text (Bos & Anders, 1990). Technical vocabulary terms are often multi-syllabic words that can be difficult to decode and pronounce, presenting yet another obstacle that interferes with the higher-order processing involved with comprehension of expository text. In addition, the definitions of new vocabulary terms may not contain an adequate amount of familiar words, or “building blocks”, to aid the reader’s understanding of the new term. Furthermore, sentences and paragraphs in natural text (as opposed to practice worksheets)
often lack a sufficient amount of appropriate context clues to help students understand new vocabulary terms.

Since the time of Aristotle, philosophers and educators have noted the importance of structure in prose, and Aristotle’s ways of thinking about a topic included many of the same top-level structures that appear in expository text today (McDermott, 1990). What is promptly and seriously needed in this Information Age (Duke, 2000) is a “call to arms” in the field of education. While it is essential that educators teach the facts and related ideas in course subjects, it is even more imperative that they help students develop strategies to read critically and comprehend information in the course textbooks.

Students need direct and explicit instruction for acquiring multiple strategies that collectively give them the skills required for expository reading comprehension in the content areas. To help them critically read and digest information in their textbooks, and later retrieve that information for tests and evaluations, students need strategies that will help them (a) identify different types of text structure; (b) annotate the important information, including signal words and spatial organizers; (c) use self-questioning and prediction; (d) understand new vocabulary words; and (e) strive to acquire more words for expanded vocabulary development. Unquestionably, these reading comprehension strategies are fundamentally needed for many students’ survival and success throughout the school years, as well as for continued fortitude and accomplishment in personal and occupational life.

**Purposes and Significance of the Study**

The purposes of this study were to determine (a) if the method of teaching text structure with annotation produced higher comprehension scores than the method of
teaching vocabulary to pre-fourth-grade readers, (b) if the method of teaching text
structure with annotation produced higher vocabulary scores than the method of teaching
vocabulary to pre-fourth-grade readers, (c) if the effect of method of instruction (text
structure versus vocabulary) on pre-fourth graders’ reading comprehension was the same
for male and female students, and (d) if the effect of method of instruction (text structure
versus vocabulary) on pre-fourth graders’ vocabulary was the same for male and female
students.

The effects were measured by immediate posttest and follow-up test NCE scores of
the SDRT4, Forms J and K containing the components of Comprehension and
Vocabulary. NCEs (Normal Curve Equivalents) are normalized standard scores with a
mean of 50 and a standard deviation of 21.06.

The present study was designed to expand the research concerning the effect of
training in top-level expository text structure and the use of annotation textmarking on
reading comprehension. Text structure and annotation are two individual reading
strategies, each of which has been shown to improve reading comprehension. In the quest
to improve students’ reading achievement, this study proposed that students would be
empowered to read informational text by learning and using the combination of these two
reading strategies.

This study also intended to expand the research on the effect of training in
vocabulary development on reading comprehension. Since ancient times, there has been
an interest in vocabulary development, and research concerning the strong relationship
between vocabulary knowledge and reading ability has been clearly established since the
early part of the 20th century. In the quest to identify strategic vocabulary instruction that
helps students improve their reading comprehension, this study focused on the findings of methods for effective vocabulary instruction that aid reading comprehension. The VK students were exposed to a wide variety of vocabulary strategies, thereby providing all readers, regardless of achievement levels, with a repertoire of skills designed to increase their reading comprehension.

For the reason that research on gender differences in educational achievement is of considerable interest to educators, this study examined the effect of method of instruction (text structure versus vocabulary) on the reading comprehension of pre-fourth-grade male and female students. Gender differences in reading comprehension and vocabulary may shed light on male and female achievement performance. The findings may expand the research of gender differences in reading achievement, thereby contributing to a clearer picture of the relationship between the gender of young students and the reading skills of comprehension and vocabulary.

This study intentionally addressed the reading comprehension of students between third and fourth grade. Many studies on text structure and annotation have been concerned with the reading comprehension of middle school, high school, and college level students. Because informational text becomes a significant and demanding element in classroom instruction and learning in the form of content area textbooks from about fourth grade on, the present study examined the effect of training the reading strategies of top-level expository text structure with annotation textmarking on reading comprehension of pre-fourth graders. Furthermore, since expository text is distinguished by the growing presence of technical vocabulary, new words that are specifically related to the topic of information, this study examined also the effect of vocabulary training and development.
More specifically, the pre-fourth-grade level was chosen for the study because:
(a) the demands of comprehending expository text information begin at the fourth-grade level; (b) many students at this grade level are novices at comprehending expository text, and, therefore, they may not resist using the new strategies of identifying text structure and annotating; and (c) these students’ exposure to various vocabulary strategies may enhance their vocabulary development and knowledge which, in turn, may increase their reading comprehension (Hall, 2004) of fourth-grade content area texts.

Research Questions

The following questions were examined:

1. Does the method of teaching expository text structure with annotation produce higher reading comprehension scores than the method of teaching vocabulary to pre-fourth graders, as measured by the Stanford Diagnostic Reading Test, Fourth Edition (SDRT4).

2. Does the method of teaching expository text structure with annotation produce higher reading vocabulary scores than the method of teaching vocabulary to pre-fourth graders, as measured by the SDRT4?

3. To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ reading comprehension the same for male and female students?

4. To what extent is the effect of method of instruction (text structure versus vocabulary) on pre-fourth graders’ vocabulary the same for male and female students?
Hypothesis

It was hypothesized that after three weeks of instruction, scores on the immediate posttest (Form K) and the follow-up test (Form J) on the Comprehension component of the Stanford Diagnostic Reading Test, Fourth Edition (SDRT4) would be higher for the pre-fourth-grade students in the Text Structure Annotation (TSA) group than the pre-fourth graders in the Vocabulary Knowledge (VK) group.

As an additional analysis of the TSA and VK comprehension scores, vocabulary scores were collected and compared for the two groups. There was no hypothesis formulated or directed at this variable. In addition, there was no hypothesis specified for the potential differential effects of instruction for male and female students.

Method

The accessible population for this study consisted of 271 middle- and upper middle-class suburban pre-fourth graders enrolled in 14 local private schools. In February 2004, letters of invitation to the study (including IRB parental informed consent forms and choice of session forms) were sent to their homes. Of the accessible population, 87 volunteers (48 girls and 39 boys) consented to participate in the study and were assigned to one of two 3-week summer sessions: 46 children in Session 1 (June 22-July 8); 41 children in Session 2 (July 13-27).

In April 2004, the 87 volunteers were pretested on the SDRT4 (Form J), ranked and matched on the Comprehension component of the pretest, and randomly assigned to the Text Structure Annotation group and the Vocabulary Knowledge group. Seventeen students withdrew from the study prior to the start of instruction and 13 students withdrew during the sessions of instruction that reduced the sample size used in this study.
(n = 57). In Session 1 there were 15 TSA and 15 VK students; in Session 2 there were 12 TSA and 15 VK students.

For the 17 students who withdrew prior to instruction, analysis of the pretest data showed a Vocabulary mean score and Comprehension mean score that were comparable to the mean scores of students who completed the study. Of the two groups, the 17 dropouts and the 57 participants, scores were comparably not the highest or the lowest scores on the SDRT4 pretest.

During the instructional phase of the study, 10 students withdrew from Session 1 and three students dropped out of Session 2. For these students, analysis of the pretest data showed Vocabulary and Comprehension mean scores that were lower than the scores of the 17 students who withdrew before instruction and lower than the scores of the 57 students who completed the study. Ironically, the students who withdrew during instruction appeared to be the weakest in vocabulary and comprehension skills.

Further analysis was done to determine differences in pretest scores of students withdrawing from the VK group and those withdrawing from the TSA group. No statistically significant differences were found in VK and TSA group means on the Vocabulary and Comprehension pretest.

The design of the study was a true experiment using a matched comparison-group format. The manipulated independent variable was the type of instruction with two conditions: (a) training in top-level expository text structure through the use of annotation textmarking, and (b) training in vocabulary acquisition and development. The continuous dependent variables were students’ posttest performance on the Comprehension and
Vocabulary components of the SDRT4, Form K (immediate posttest) and Form J (follow-up test).

The TSA and VK groups each received 10 hours of direct and explicit instruction in workshop settings. One condition (TSA) consisted of five 2-hour lessons of instruction, modeling, and practice of various approaches to identify and annotate expository text structure. The second condition (VK) consisted of five 2-hour lessons of instruction, modeling, and practice with skills to determine word meanings. Materials used in each group included a rich variety of visual organizers and paragraph excerpts from their schools’ fourth-grade science and social studies texts to make learning more meaningful and enhance reading comprehension. Both groups were engaged in a variety of oral and written activities that were geared for individual, paired, and small group involvement.

A structured informal observation was conducted during one lesson for each group by two Ph.D. reading professors. The purpose of the observation was to assess if the TSA and VK groups received equivalent treatment from the researcher. The results of the observation indicated that the extraneous variable of groups receiving unequivalent treatment was controlled by the researcher, thus enhancing internal validity of the study.

On the last day in each session, the TSA and VK groups were given the posttest SDRT4 (Form K); two months later, the follow-up test (Form J) was administered. As attendance records had been kept, the results of applying ANCOVA to the data determined that attendance was not related to performance.
Results

It was hypothesized that the scores on the immediate posttest (Form K) and the follow-up test (Form J) on the Comprehension component of the SDRT4 would be higher for the pre-fourth-grade students in the Text Structure Annotation group than the pre-fourth graders in the Vocabulary Knowledge group.

The hypothesis was not supported by the results of the 2 (Method) X 2 (Gender) ANCOVA, which used the posttest and follow-up test scores of the Stanford Diagnostic Reading Test, Fourth Edition (SDRT4), Forms J and K, respectively, as the dependent variables. The scores on the posttest and follow-up test on the Comprehension component were not statistically higher for the pre-fourth-grade students in the TSA group than the pre-fourth-grade students in the VK group. A brief description of the data analysis procedure follows.

The total mean scores of the VK group and TSA group measured at the three time points (pretest, posttest, and follow-up test) were very similar on both the Vocabulary components and Comprehension components. The VK group’s mean scores were slightly higher than the TSA group’s mean on the Vocabulary and Comprehension components tested at the three time points, with the exception of the Comprehension posttest. The mean scores for both the VK and TSA groups fell approximately one half or less of a standard deviation below the NCE mean score of 50 on all tests except for the Vocabulary follow-up test. For both groups, the mean scores on the Vocabulary follow-up were higher than the NCE mean score.
Conclusions

This research was built on the premise that teaching pre-fourth graders how to identify expository text structure patterns and annotate the important information would enable them to better comprehend the reading material found in their textbooks and on tests. The findings of the four research questions will be discussed.

The first and second questions asked in this study were if the method of teaching expository text structure with annotation produced higher reading comprehension scores or higher vocabulary scores than the method of teaching vocabulary to pre-fourth graders, as measured by the Stanford Diagnostic Reading Test, Fourth Edition (SDRT4).

In this study, the hypothesis was not supported. Scores on the posttest and follow-up test on the Comprehension and Vocabulary components of the SDRT4 were not statistically higher for the students in the Text Structure Annotation group than the students in the Vocabulary Knowledge group. The total mean scores of the TSA and VK groups, measured at three time points were very similar on both the Vocabulary and Comprehension components. Both groups achieved higher scores from pretest to posttest, and from posttest to follow-up.

The third and fourth questions in this study asked to what extent was the effect of method of instruction (text structure versus vocabulary) on pre-fourth grader’s reading comprehension and vocabulary the same for male and female students.

Data analysis of the Vocabulary follow-up test indicated that males benefited more from vocabulary instruction than instruction in text structure. In addition, data analysis indicated that the factor of Gender was statistically significant on the Vocabulary posttest and Comprehension posttest, with females scoring statistically higher than males.
Factors Contributing to the Outcome of the Study

Although there is debate about whether young children can learn from text forms other than narration, a growth of research suggests that young children *can* learn from informational texts when given the experience. In addition to the time constraint of 10 hours of instruction over a 3-week period of time for the TSA group and the VK group which is later addressed, there are other factors specific to the training of identifying text structure and annotation that may have had an effect on the outcome of the study. The participants, themselves, varying in cultures and backgrounds brought to the study various factors such as differences in (a) background knowledge and experience, (b) reading ability, (c) age and maturity, and (d) gender.

**Background Knowledge and Experience.** It has been acknowledged for many decades that what is understood from text is influenced by prior knowledge (Bartlett, 1932). Johnston (1984) found that prior knowledge will influence text comprehension and can bias information from reading comprehension tests, including standardized tests.

According to Reese (1988), three types of schemata (mental networks of prior knowledge and experience) are: (a) general world knowledge or background experience, (b) specific knowledge about particular topics and content, and (c) text structure knowledge. When readers have general world knowledge related to the passage topic, the text activates that knowledge and aids comprehension. When readers know specifically about the passage topic, the text aids them in activating and retrieving the knowledge they have in long-term memory for the purposes of review or for expansion of their schemata (Devine, 1986).
In this study, student differences in general or specific background knowledge may account for differences in comprehension performance on the posttest and follow-up test. Students who had prior knowledge of the paragraph topics may have comprehended the passages more efficiently and may have recognized the author’s structure more readily than those who were unfamiliar with the content topic. Students who had prior knowledge of vocabulary words on the tests or had more background experience using various vocabulary skills (e.g., analogies, context clue, analyzing word parts) may have comprehended the tests’ passages more effectively.

Background knowledge and experience increases the average student’s ability to answer questions through the processes of (a) storing answers in memory prior to the passage being read, and (b) organizing prior knowledge into a framework with slots in which information is added and misinformation is corrected in one’s memory (Tuinman, 1979). In this study, students’ prior knowledge of paragraph topics and vocabulary could have biased information on the Comprehension and Vocabulary posttest and follow-up test by increasing the average student’s ability to answer questions about familiar subject matter. Research has found that readers with rich prior knowledge about a reading passage have the ability to fill in informational gaps more efficiently than readers with minimal prior knowledge (Mayer, 1987).

Reading Ability. There are developmental differences in children’s ability to identify expository text structure in passages and grasp meanings of new words. Poor readers who have difficulty decoding words will be less focused in identifying text structure as they struggle to read individual words (Bender & Larkin, 2000), and new vocabulary words become obstacles to their comprehension. Children with inadequate
decoding and word identification skills have a limited understanding of the reading process, and are less sensitive to authors’ conventions and different text structures (Armbruster, Anderson & Ostertag, 1987).

McGee (1982) examined the differences between good and poor readers in elementary school and their awareness of text structure. Sixty third- and fifth-grade students from four elementary schools participated in the study. Results demonstrated that fifth-grade good readers had a greater awareness of text structure and recall more information than third-grade good readers or fifth-grade poor readers. Furthermore, readers’ awareness and use of higher-order text structure improves with reading ability.

In an earlier study, Becker (1977) found that even for second grade competent readers who decoded fluently, the vocabulary levels in their school texts in third- and fourth-grade left them unable to comprehend the material accurately. In 1980, Meyer, Brandt, and Bluth conducted a study with 102 ninth-grade students who were grouped as good, average, or poor readers based on the reading section of the Stanford Achievement Test and a district reading achievement test. Results showed that reading ability may be a variable that affects the use of text structure strategy, and that awareness and use of text structure at the ninth-grade level was mainly a skill of good readers.

The 57 participants in this study ranged from below average to above average readers. Some students had difficulty reading the sentences and needed help in sounding out words. Limitations to the effectiveness of strategy training existed, such as weak decoding skills, automaticity, and memory. In a study by Englert and Hiebert (1984), good readers in Grades 3 through 6 recognized text structure more than poor readers in the same grades. Furthermore, research indicates that how students consider themselves
as readers can affect the ways they approach text and their *eagerness to become actively involved* in the reading task (McCarthey, 2002).

**Age and Maturity.** Age and maturity are likely factors affecting a student’s implementation of the text structure strategy (McGee, 1982). Text structure recognition correlates with grade level which suggests a developmental aspect as indicated by the ability of more mature readers to perceive better and use this strategy (Englert & Hiebert, 1984; McGee, 1982; Taylor, 1980). Belmont and Butterfield (1977) found that immature learners were trained to use various strategies to aid their comprehension, but they seldom used those strategies later.

Taylor (1982) examined whether development and age had an effect on the use of text structure. Hypothesizing that mature readers were more sensitive to text organization, the study was comprised of sixth-grade poor readers, sixth-grade good readers, fourth-grade good readers, and graduate students. Results from the immediate and delayed posttests indicated that (a) the graduate students recalled more information than the sixth-grade and fourth-grade readers, (b) sixth-grade good readers recalled more than sixth-grade poor readers or fourth grade good readers, (c) there were developmental differences in children’s ability to recall expository text, and (d) there were developmental differences between good and poor readers.

In a study by Englert and Hiebert (1984), sixth-grade students were more aware of text structure than third-grade readers. More recently, Troyer (1992) conducted a text structure study with 75 fifth grade students and replicated the study with sixth grade students. The results demonstrated that, perhaps because of age, (a) six-graders were
better at using different text structures than fifth-graders, and (b) the scores on the sixth-graders’ immediate and delayed posttests were higher than the fifth-graders’ tests.

In the present study, all the participants were entering fourth grade in approximately two months following the text structure intervention, yet they varied greatly in learning maturity as noted in their reading and writing developmental skills. In the TSA group, transparencies were used for visual guidance and support in identifying text structure and using annotation, and the thinking and annotation processes were verbally and visually modeled slowly. The class size was relatively small, and all students had favorable seating arrangements for instruction.

Despite this method of explicit instruction and close proximity of the students to the researcher, some students in the TSA group had difficulty following directions and lagged behind in annotating their copies of paragraphs as they viewed the annotation on the transparencies. Some of their annotation markings were overly large and muddled, covering other important words in the paragraph excerpts; other annotation markings were incorrectly placed, disordered, or missing altogether. Other students had difficulty in making charts and webs to organize the significant information, and some children wrote main idea questions that were unreadable by the researcher or teacher assistant. It was apparent that some of the children had not yet developed the fine motor skills needed for underlining words, writing words and numbers in the margins, keeping words on a straight line, and numerating important facts neatly and in the appropriate places in the paragraph or in the margin.

Learning how to use text structure with annotation requires a student’s interest and attention. Although this researcher brought a great deal of humor into the lessons and
involved students in game-like activities, it was frequently noted that some students
daydreamed and, thus, lost track of the text structure and annotation procedure. Having
prior knowledge that their activity practice sheets would not be graded, it is possible that
those students who repeatedly “got lost” were not as motivated to participate. Although
this may be a reasonable explanation, this researcher believes and is supported by
research (McCarthey, 2002) that they did not fully participate probably due to their level
of maturity, underdevelopment of fine-motor skills, or their self-awareness that they were
not good readers. As the majority of daydreamers were boy students, the factor of the
male rest state (discussed previously and again in the following section) is a very
probable explanation of their inconsistent participation.

Pre-fourth-grade students were addressed intentionally in this study because the
demands and expectations of comprehending content area texts would begin in their next
school year. While it was the researcher’s intention to help the TSA students acquire the
skills needed for comprehending expository text, it became apparent in the classroom
setting that the majority of TSA pre-fourth graders were not yet mature enough, or
interested enough, for strategic instruction in text structure and annotation. Perhaps
children at this age would benefit better from instruction in text structure and annotation
after the first few months of fourth-grade, after they initially experience the complexities
of reading expository text, take tests on the information read, and ask themselves or
others that all too familiar question, “Where did the teacher get the test questions?”

Conceivably, their struggle with expository text may be worth the wait before
showing them “the secret” of where the teacher “gets the test questions.” Perhaps some
pre-fourth graders need a few more months of mental and physical growth before they
can understand fully the plan of action for attacking expository material and are able to use fine-motor skills for effective annotation. Still others may need the incentives of report card grades so that they will be more interested and involved in identifying and annotating text structure. Fourth-grade students have great potential to become “skeleton hunters,” skilled readers who can find the most important information predictably embedded in the various text structures (Aikman & O’Hear, 1977), and annotate that information carefully in an organized choice of ways.

Gender. Reading specialists and education professionals have increasingly observed that girls and boys perceive reading as a feminine activity, and research literature suggests that North American boys and girls at all grade levels consider reading as a feminine affair. In 1990, McKenna and Kear conducted an Elementary Reading Attitude Survey (ERAS) that focused on attention to gender differences. Results of the data indicated that girls significantly have more positive attitudes toward recreational and academic reading than boys at all grade levels and that this gap widens with age. As boys’ preferences to read decreases negatively and gradually through the years, the lack of reading experiences takes its toll. Reports on Literacy Programs (1996) affirm that, overall, American boys score lower on standardized tests than girls.

In the last ten years, a new approach of understanding how children learn has evolved into its own field of research coined “gender science” (Gurian & Stevens, 2005). At the heart of gender science is “brain research,” a focus on the physiological, biochemical, and neurological differences in the minds and bodies of males and females. The relatively recent findings of gender differences and reading achievement (Gurian & Stevens) may help explain why in this study the males benefited more from vocabulary
instruction than instruction in text structure, as indicated by the data analysis of the Vocabulary follow-up test. The learning environments of the TSA and VK groups first will be discussed.

For the TSA students in both sessions, the lessons of instruction and practice required students to remain seated at the tables, viewing the annotation of paragraphs on the transparencies shown with an overhead projector on a drop-down screen. As the researcher modeled the thinking process of identifying text structure, verbally determining what information was important, and annotating that information, students listened and annotated their copies of the paragraphs. Practice activities were done in pairs or groups of three to provide for ‘think alouds,’ opportunities for children to debate and exchange ideas about choosing the main idea sentence and significant supporting details, as well as ways to annotate the information appropriately. After small group practice, students’ paragraphs were compared to those on the transparencies, and main ideas were transformed into questions which were written on the transparencies by the researcher and on the paper copies by the students. Throughout the lesson, except for a 5-minute break, the children remained seated at the tables. Overall, lesson instruction and follow-up practice activities for the TSA group required the multi-tasking activities of listening, observing, copying, critical thinking, comparing, and questioning. The very nature of comprehending expository text and attention to detail for annotation set the stage for a contemplative, sedate learning atmosphere.

Like the TSA group, the VK students received instruction via transparencies on the overhead projector and practice activities were done in pairs or small groups. Contrastingly, however, lesson instruction for the VK group was relatively brief, and the
vocabulary skills taught required less critical thinking, attention to detail, or fine-motor coordination. Generally, vocabulary learning did not require the multi-tasking activities of listening, observing, copying, judging trivia from significant information, comparing, and questioning. VK activities were focused primarily on one skill at a time, with practice sheets usually in the format of games, puzzles, and comic strips. For the most part, students circled multiple-choice words or wrote answers in crossword boxes or on short lines. Several activities included drawing and coloring pictures, such as their visual interpretations of idioms in figurative language as shown in the Appendices. As the game-like activities sparked a healthy competitive spirit, there was much movement in the room as the students moved from group to group seeking or giving help on word meanings. Eventually, the activities turned into an amusing rivalry of boys versus girls. Overall, the learning atmosphere in the VK group was entertaining and lively.

In light of the findings from gender science research, it is not surprising that the results of the Vocabulary follow-up test indicated that boys in both sessions benefited more from vocabulary instruction than instruction in text structure. The TSA and VK groups had contrasting learning settings and agendas, and the very nature of the VK activities offered a more “boy friendly” learning environment in the following ways:

1. Young males are fueled with “boy energy,” energy that keeps them physically active and almost always in motion. Furthermore, boys have more dopamine in their bloodstream which increases impulsive risk behavior and more blood flow in their cerebellum that controls physical action. Both of these factors contribute to a boy’s tendency to learn less well than girls when sitting still, especially for long periods of time (Gurian & Stevens, 2005).
Boys in the VK group were physically engaged in learning vocabulary skills. While the girls usually remained seated at the tables, the boys moved around the room looking at other students’ pictures, comic strip activities, crossword puzzles, and sentences involving new words. Also, it was observed that boys liked to perch like birds with both feet on their chairs, rock back and forth on their chairs, and sit on the edge of the chairs with one leg extended as if ready for departure.

Contrastingly, the boys in the TSA group were required to sit still during the text structure and annotation modeling process and during their small group practice activities of identifying text structure and annotating paragraphs. Quite simply, the comprehension and annotation of expository text grants little opportunity for physical movement. The reader is faced with the mental challenge of filtering the significant information from the trivial and organizing that information with various annotation markings, a comprehension process that keeps “boy energy” under tight wrap.

2. The female corpus callosum (the connecting bundle of tissue between hemispheres in the brain) allows more cross-talk between the hemispheres than the male corpus callosum. As a result, girls have the greater ability to do more than one task at a time successfully. On the average, females are superior to males at multitasking when tested (Gurian & Stevens, 2005).

Boys in the VK group had activities that required little multitasking as compared to boys in the TSA group. Crossword puzzles and context clues entailed the use of thesauri and dictionaries, and some notetaking required copying facts from the transparencies. Activities focused on one skill at a time, and the worksheets required little writing. On the other hand, activities in the TSA group required profuse listening, reading
and writing multi-tasking skills to identify a new text structure, annotate the important information with underlining and enumeration, write notes in the margins, chart and map the information, and transform the main ideas into a predictable test questions.

Moreover, boys’ brains operate with 15 percent less blood flow than brains of girls, and generally do not move between tasks as quickly as girls (Gurian & Stevens, 2005). A boy’s sensory center takes longer to make a transition between tasks, a necessity that can lead a teacher to assume that he isn’t listening to instruction, or won’t do the task. Girls are recognized as navigating print text better than boys, and boys are almost always referred to counseling or remedial support for being underachievers, reluctant to work, and uncooperative (Osler & Vincent, 2003).

In both TSA sessions, it was observed that while the girls simultaneously annotated their copies of paragraphs with those being annotated by the researcher on the transparencies, the boys often fell behind and became confused with correctly marking the important information. Some appeared to daydream and annotate only portions of the paragraphs, and the researcher and teacher assistant helped many more boys than girls accurately annotate and organize the important information. The TSA boys’ learning behavior appears to confirm the findings of Gurian and Stevens (2005) that boys take longer to make a transition between tasks.

3. Two additional neurological gender differences may explain the results of the data and why boys in the TSA group lagged behind or appeared to daydream during instruction and practice activities. First, girls have stronger neural connectors in their temporal lobes than boys, a physiological advantage that promotes more detailed memory
storage and better listening. In general, boys pick up less of what is happening, especially when it is said in words (Gurian & Stevens, 2005).

In this present study, this factor may help explain the male students’ confusion in following directions and annotating paragraph passages accurately. Although the researcher slowly explained and modeled the annotation process on transparencies, one paragraph at a time, the male students frequently asked for re-explanations of why and where to place the annotation markings in their identical copies of the paragraphs. In addition, the female students answered questions more rapidly when asked to choose the main idea and the supporting facts to be enumerated.

Second, the male brain must renew, recharge, and reorient itself by moving into a state of rest that is essential to male brain activity. In a male rest state, the blood flow is not as active compared to the female rest state (Gurian & Stevens, 2005).

According to observations notes recorded by teacher assistants, girls in the TSA group had more endurance for listening to instruction and completing assignments. TSA boys, on the other hand, often daydreamed during instruction and did not finish the exercises. They were also inclined to tap their pencils and highlighters, fidget, or make other noises to stay awake and keep focused.

In summary of the discussion of gender, a sufficient amount of research indicates that boys may perceive reading as a feminine activity, and hence, their interest in reading diminishes over time and their reading attitudes become more negative. These reasons may contribute to American boys scoring lower on standardized tests than girls, an outcome that sadly illustrates the adage, “If you don’t use it, you lose it.”
Additionally, the physiological, biochemical, and neurological gender differences confirmed by gender science research may help explain the results in this study, indicating that: (a) the males benefited more from vocabulary instruction than instruction in text structure and annotation, and (b) the females scored statistically higher than males on the Vocabulary posttest and Comprehension posttest.

Implications

Comprehension of expository text is difficult for most students at all grade levels, and it is a critical factor that becomes increasingly more important as students progress through school and take their places in the occupational world. Reading strategies for comprehending content area text need to be introduced in the elementary grades so that a strong foundation is established to better ensure academic achievement and success for students of all abilities.

In attempting to expand the research on the complexities and myriad of factors affecting expository reading comprehension, a comparison of two reading strategies were examined with pre-fourth graders: text structure with annotation versus vocabulary development. Although the method of instruction was not statistically significant, this study may have contributed additional, and perhaps, provocative thoughts for educators and literacy experts.

First, this study contributed to the findings that boys do learn differently than girls, as noted in their learning behavior, energy levels, attentiveness, multi-tasking skills, and test performance. Gender exercises a strong influence in education, particularly in literacy, yet relatively little current literature was found on gender and reading achievement. Boys and girls learn differently based on sociological, psychological,
physiological, biochemical, and neurological differences. Teacher education courses need to address this issue, and schools need to check the language arts curricula for male-friendly and female-friendly standards. Reading requirements may need changing if some books are not engaging enough to keep boys or girls interested. Students could be given personal choice of reading assignments, and the use of visual media should be expanded.

Second, in support of more recent research on vocabulary and reading comprehension, the vocabulary skills instruction in this study were modified so that new words were not taught in strictly traditional ways. Students used dictionaries and thesauri when they wanted to complete their crossword puzzles, each puzzle composed with a theme and related words. Comic strips for synonyms, games for antonyms, and drawings for figurative language were stimulating learning activities.

Based on notes taken by teacher assistants, it was observed that using this method for teaching vocabulary resulted in an almost overly-enthusiastic group of children who used new words in their speaking and writing activities. This approach greatly contrasted with the traditional approach of teaching vocabulary, a stale method that requires students to memorize unrelated words, definitions, and parts of speech, only later to regurgitate what they have memorized on unit tests. After students follow this traditional process, however, research concludes that most students have difficulty generating sentences with the words, a fairly good indicator that the words are not known. Traditional methods of vocabulary instruction need to be modified, but perhaps even more importantly, teachers need to use the vocabulary words in conversations with students, in written comments about their work, and in messages on-line. Students rarely hear unit vocabulary words used in
sentences by their teachers or other students, and thus, they view word study as something done only as a school task (Francis & Simpson, 2003).

Third, written observations in this study supported the findings that using the reading strategy of identifying text structure and annotating the significant information is a developmental aspect as indicated by more mature readers to perceive better and use this strategy. Students’ maturity level, compounded by gender differences in learning, are two prevailing factors that raise several questions: What grade level should text structure with annotation be implemented in the classroom? Should students first experience the difficulty of comprehending expository text so that they later value “the secret” of where the teacher “gets the test questions”? How can this reading strategy be taught in the classroom to accommodate different reading abilities, particularly students with reading disabilities? How can this learning strategy be implemented and adapted efficiently to meet the learning needs and differences between boys and girls? Finally, in addressing the chief source of what hinders reading comprehension of expository text, another question is raised. Until students can write in their books, what alternatives (e.g., copies of the chapters) can be provided so that they experience the practice of annotating significant information, an asset not only for success in their school years but also a skill later enriching their adult lives?

Limitations of the Study

There were several limitations in this study that could have influenced the outcome of the results, as well as the generalizability of the findings. First, because random selection was not possible, the results are generalizable only to the specific
school setting and the participants in the study. The sample consisted of 57 pre-fourth
graders from 14 local private schools that were of moderate to high socioeconomic status.
The range of reading ability levels and socioeconomic stratas were represented and the
student population was moderately diverse, although the majority was Anglo-American.

Another limitation to the study was the duration of treatment that consisted of five
two-hour sessions over a period of three weeks, totaling 10 hours of actual instruction.
This time frame seemed reasonable since the study took place during summer vacation
and the researcher hoped to reduce the threat of attrition. Cronbach and Snow (1977)
suggested that strategy instruction required a minimum of 10 class periods, yet the
number of minutes in each period was not specified.

Finally, text structure recognition and vocabulary development correlate with
grade level which suggests a developmental aspect as indicated by the better ability of
more mature readers to perceive and use this strategy better (Englert & Hiebert, 1984).
As previously discussed, the pre-fourth graders in this study varied greatly in reading
maturity, learning behavior, and fine-motor coordination. As compared to the VK group,
these factors were more pronounced in the TSA group, wherein attentive listening,
concentration, and refined hand-motor skills were essential for text structure
identification and orderly, accurate annotation textmarking.

Recommendations for Future Research

Text Structure and Annotation

Although this study did not show statistical significant results between the TSA
and VK reading comprehension scores, a most important consideration for future
research is the examination of the effect of the combined strategies of text structure and
annotation on reading comprehension of fourth-grade students. Most studies of the effect of text structure instruction on reading comprehension involve middle and high school students, yet comprehension of expository text is heavily required of students beginning at the fourth-grade level. The national dilemma, however, is that while students are expected to digest text information in preparation for evaluations, they lack the strategies to do so. In the review of research, it has been established that identifying text structure and annotating important information are two strategies that improve students’ reading comprehension. It stands to reason that the combination of these two strategies would be advantageous in helping students organize and construct meaning from content area texts, regardless of grade level.

Although an abundance of research concludes that the strategy of using text structure with annotation improves reading comprehension and recall of information from expository text, students are not shown how to use this strategy and they are not permitted to write in their books in the majority of schools. They are tested on text material without knowing how to study strategically for it. This predicament promotes one solution that soft-back books, particularly in the content areas of science and social studies, should be issued with the intention that each student is a one-time user for textmarking important information.

Multiple Strategies

In this study, scores on comprehension and vocabulary were not statistically higher for students in the Text Structure Annotation group than in the Vocabulary Knowledge group. There is, however, much research that supports the effect of training in expository text structure and annotation on reading comprehension. Embedded and
interconnected in this strategy of using text structure with annotation are additional avenues for research concerning the effects of various teaching methods that will enhance the complex processes of comprehending expository text. In future text structure studies, concern needs to focus on topic familiarity and the role of background knowledge for the development of teaching methods and the assessment of students’ reading performance with teacher-made tests, publisher-made tests, and standardized tests. Additionally, research needs to be directed at other multiple strategies to enhance the use of text structure with annotation such as the inclusion of signal words, spacial organizers, and generating questions. These strategies help students understand how concepts and ideas connect (Lorch & Lorch, 1996), how new vocabulary words relate to familiar ones (Rhoder, 2002), and how important text information can be transformed into predictable questions (Gersten et al., 2001).

Vocabulary and Reading Comprehension

An additional focus of future studies should be on the relationship between vocabulary development and reading comprehension. Since the early 1900s, the strong relationship between vocabulary and reading comprehension has been known, yet the exact nature of the connection remains ambiguous. Research has suggested a relationship between students’ vocabulary test scores and their ability to know words when completing a reading comprehension test. This researcher’s view is that while vocabulary is a skill that is taught for the development of reading, it is not directly related to the instruction of reading comprehension. Reading comprehension may be affected when students integrate new words with other conceptual knowledge, have multiple encounters with the new word in natural print environments, and process the new vocabulary word in
a meaningful way (Beck & McKeown, 1991). Future research needs to examine Mezynski’s (1983) four hypotheses, as previously discussed, of the relationship between reading comprehension and vocabulary, as well as to scrutinize teaching strategies that are the most effective in providing students the essential amount of exposure to new words so that they can really know words (Dale, 1965; Nist & Olejnik, 1995).

Factors Contributing to Outcome

Although the results of the ANCOVA for the present study were not statistically significant for method of instruction (text structure with annotation versus vocabulary), it is probable that the ideas explored here could be developed further in future research with a different approach that might yield different results. As pointed out by Lovett et al. (1996), no matter how successful the strategy training approach, the training itself does not guarantee transfer of training or broad generalization of training effects. The following factors contributing to the outcome of this study, as previously discussed in Limitations, also offer possible areas for further research.

Participants. One recommendation is that the particular results and gains observed from this study’s population should be examined and substantiated with additional, larger samples. Future study should include mid-fourth and fifth graders in private schools and public schools with varying socioeconomic levels, to compare the effect of instruction in using text structure with annotation versus vocabulary instruction. Also, the comparison of these elementary children’s strategy use to that of middle and high school students may provide a better understanding of the effects of prior knowledge, age, maturity, and ability on expository reading comprehension.

Time. In planning further research, another consideration should be given to the
factor of time. In the present study, students were exposed to the TSA treatment and VK comparison interventions for 10 hours, a relatively brief amount of time available for the study. Further research that involves longer intervention periods may result in different outcomes. Long-term training and practice in how to use text structure and annotation in reading expository text are necessary to improve reading comprehension. Frequent questions in research and teaching situations are directed at the amount of time needed for the intervention treatment and practice. In a study with 73 college freshmen, Nist and Simpson (1989) determined that the key factor to the students successfully improving their metacognitive skills was the duration of their treatment, 5 weeks of training. The present study, consisting of only 10 hours of instruction and practice may have had a more potent treatment effect if students had received extended training and practice.

In support of extended training and practice needed for more successful use and transfer of text structure with annotation skills, additional research must examine the implementation of this strategy training into the fourth- and fifth-grade curricula. Ideally, this combination strategy would be modeled and practiced with texts used by the students while content area subjects are being taught. The students would receive instruction and practice throughout the school day, with the multiple learning experiences mounting into an intense quantity of exposure over the school year. Research should also address this strategy implemented as a separate study skills course. Instruction, modeling, and practice should be experienced with content area texts currently used by the students. Practice using this combination strategy with the curricula’s textbooks would offer students a learning investment; using their own texts would provide a more realistic,
practical, and meaningful learning experience. This practice would be advantageous over using excerpts or text models from outside resources.

**Maturity.** Future research needs also to address the physical and mental developmental maturity level required for learning the text structure with annotation strategy. Expository text is difficult for students in all grade levels, particularly for elementary school children. There is nothing magical, no easy way out, in learning how to find the “hidden” text structures in paragraphs. Receiving instruction and practice on how to find text structure within passages, along with different ways to annotate that information, can be tedious and bewildering to young readers. They must select and transform particular words, phrases, or sentences within an expository text passage into a hierarchical structure of importance.

The very nature of the beast demands their young minds listen attentively and that their energetic bodies sit still for relatively lengthy periods of time. Eye-hand coordination is fundamental for accurately copying the annotation markings of the teacher, and their fine-motor skills are essential for annotating with petite numbers and words within the passages and in the margins of books or copies. The pre-fourth graders in this study varied greatly in physical and mental maturity. Further research needs to help answer the questions of when to introduce text structure with annotation as a classroom activity and how to make this reading comprehension strategy, despite varying developmental maturity levels, practical and effective for all students in the classroom setting.

Regrettably, many educators presume that as students mature through the grade levels, they will acquire and use text structure skills naturally for comprehending
expository textbooks in the content areas. Quite the contrary, the majority of students need explicit instruction and practice in using this reading comprehension strategy, as reflected in a decline over the past 10 years in the reading proficiency of college graduates. Literacy experts and educators stated that they are stunned by the results of a recent adult literacy assessment ("College graduates’ literacy," 2005). As quoted by the president of the American Association and librarian at California State University, “It’s appalling—it’s really astounding. Only 31 percent of college graduates can read a complex book and extrapolate from it. That’s not saying much for the remainder” (p.11).

Teacher Training

Directly related to the implementation of strategic instruction in text structure and annotation into the school curriculum, future research should be aimed at teachers’ functional knowledge of expository text structures (McDermott, 1990) and knowledge of gender differences in learning. Training teachers how to give direct and explicit instruction in text structure with annotation should be at the core of teacher education courses. Included in training for effective text structure instruction should be teachers’ awareness and understanding that for students, certain text structures are easier to recognize and improve recall than others (Kletzien, 1992). Sufficient amount of time, therefore, must be provided for teaching the individual text structures to better ensure the students’ understanding of each structure.

Regarding teacher training in annotation instruction, this researcher advocates that strategic instruction involve the use of visuals (e.g., transparencies and overhead projector) for slowly modeling the strategy of identifying and annotating the six basic expository text structures commonly found in content area books (Anderson &
Armbruster, 1984). To combine the teaching of subject matter with the strategy of annotation, the transparencies should be copies of the text passages that are required course readings. Ideally, this method of instruction allows students to read and annotate paragraphs in their books or on paper copies simultaneously as the teacher annotates the transparencies. To help students organize expository text information, teacher training in annotating textmarking must include the skills of verbally modeling the thinking processes involved with critical reading and thinking, as well as verbally explaining why text information is either important or trivial.

Also needed is teacher training concerning gender learning differences and academic achievement. Although gender differences in literacy are not currently “hot” topics, teachers must be aware of and accommodate the different learning behaviors, attitudes, interests, and preferences between boys and girls. Teacher training should address how to create “girl-friendly” and “boy friendly” classroom environments, as well as how to avoid stereotyping children’s learning processes and academic achievement potentials.

Tests

In addition, future research should consider the importance and use of teacher-made and text publisher-made chapter tests to assess the performance of students after the text structure/annotation strategy has been given or continues to be given if immersed in the school curriculum. Teacher-made and publisher-made chapter tests are, to a great extent, directly related to the text material being taught in the classroom, whereas standardized tests are less specific to what is being learned directly in class. The data
Teacher or publisher-made chapter tests are a more direct assessment of how accurate students are in identifying text structure and annotating that information in an organized way to connect facts and ideas. Standardized tests, contrastingly, present random or unfamiliar topics that require more of the students’ background knowledge and prior experience in comprehending material to which they have been quickly exposed. Future research can examine the short-term and long-term effects of text structure with annotation on reading comprehension of students from fourth-grade on by comparing content area teacher-made and publisher-made test scores of (a) students receiving strategic instruction in text structure with annotation to students in a control group, and (b) students receiving strategic instruction in text structure with annotation to students receiving instruction in vocabulary knowledge and development. These comparisons of content area test scores, along with periodic surveys and questionnaires, can be tracked longitudinally over the years through grade levels to help determine the long-term effect of students’ use of this reading comprehension strategy.

Gender Differences

Future research also should embrace gender differences and reading achievement, a field of research that has received little attention from researchers, educators, or learning experts (Cassidy, Garcia, & Boggs, 2005). In this study, the results of the ANCOVA were statistically higher for females on the Vocabulary and Comprehension posttests. Also, the interaction of Method X Gender was statistically significant which suggests that boys benefited more from vocabulary instruction. It can be safely said that
boys do learn differently than girls, a phenomenon supported in the past by pedagogical, sociological, and psychological studies and supported more recently by gender science that has revealed physiological, biochemical, and neurological differences. Despite obvious differences in gender learning behaviors, schools across the nation do not recognize the cognitive differences between males and females, a predicament that has sprouted into a “crisis in male education” (Costillo, 2005). Since, in fact, boys do learn differently from girls, future research should seek the changes in instruction and practice needed in reading programs for optimum effects on reading motivation and achievement of males and females. Gurian and Stevens (2005) suggest, for example, to vary the school and class schedule to fit young students’ brains and encourage boys to sit close to the front of the classroom. They can listen better from that position and they can’t become as disengaged as they can from the back of the classroom.

As previously discussed, several physiological and biological factors contribute to boys’ tendency to learn less well than girls when sitting still, especially for long periods of time. Another recommendation for further research would be alternative ways to make text structure with annotation a more active method of instruction and practice. Frequent breaks may help boys stay more focused, as for example, a two-minute break after annotating four to five paragraphs. Also, students could take turns standing by the overhead projector and annotating paragraphs on transparencies while verbally modeling the thinking process to their classmates. Other possibilities may include various class incentives such as time given halfway through the lesson for a healthy snack treat or short free-time period.
Finally, a serious consideration for future research concerns the spiky dilemma of the textbook itself. There are two critical issues regarding textbooks that need to be addressed: (a) in the majority of private and public schools, students are not allowed to write in their books, and (b) the majority of books are hardback, and their collective weight in backpacks contributes to students’ back injuries and other health issues.

Although the hypothesis in the present study was not supported, it has been established by much other research that identifying text structure and using annotation are effective strategies for increasing reading comprehension, yet school districts continue to order books that cannot be written in by students. Thus, students are faced with yet another obstacle in comprehending expository text in preparation for tests—even if they learn how to use text structure with annotation as a reading strategy, they can not use their books to highlight, underline, enumerate, summarize in the margins, or use other markings to connect facts and ideas. Since it is decreed that students cannot write in their books, one alternative is for students to write the significant information in the form of outlines or notes. This choice, however, is time-consuming and provides less active interaction between the reader and text (Simpson & Nist, 1990). Another option is for teachers to make paper copies of the chapters for each student, a task that is time-consuming and also expensive in duplicating.

Recently, one school in Arizona discontinued textbooks altogether and issued laptop computers to each of its 340 students. The rationale behind using electronic materials in the text-book-free environment was to get students more engaged in learning, to provide for online homework and submission, and to safeguard students copying or
plagiarizing material (“Ariz. school,” 2005). Using laptop computers also offers the advantage of being able to underline and enumerate important facts and ideas, in addition to printing the text material for annotation by hand.

Although many schools are phasing out their printed textbooks and many textbook publishers are offering more digital formats (“Ariz. school,” 2005), textbooks will continue to be the primary educational tool in schools’ curricula for many years. This researcher recommends future study in the advantages of adopting paperback, or soft-back, recycled-paper textbooks for one-year use so that students can read and annotate. Concerning reading achievement, books that have been previously annotated should not become second-hand books for other students. If a student uses a textbook already annotated, it may interfere with reading comprehension (Silvers & Kreiner, 1997).

Furthermore, the majority of books are hard-back which is a tremendous physical load for students to carry. According to the American Occupational Therapy Association, more than 40 million children in the United States carry backpacks, more than half of them carrying backpacks that are overloaded. The U. S. Consumer Product Safety Commission reported that from 1994 to 2000, more than 23,000 young people, ages 6 to 18, were treated in emergency rooms for backpack related injuries. The Association of American Publishers is aware and concerned with the overweight backpack phenomena, and offers possible solutions: (a) change textbook paper from 45 lb. paper to 40 lb., thus reducing textbook weight by 12% depending on the type of cover; (b) change to soft cover books instead of the hard covering now required by The Advisory Committee on Textbook Specifications (ACTS); (c) reduce the size and weight of textbooks by reducing the scope and range of various state curricula standards; (d) deliver education content
electronically; and (e) have school districts purchase classroom sets of books, in addition to books students can keep at home (Association of American Publishers, 2003).

Paul Lawrence Dunbar Middle School, a public school in Ft. Meyers, Florida has purchased classroom sets of books, in addition to a set for each student to keep at home. While this alternative alleviates the backpack problem, it does not permit students to write in their books at home and thus, the skills of identifying text structure and annotating important information to improve reading comprehension remain unfeasible.

This researcher suggests that organized action needs to be taken promptly by parents and educators to petition ACTS to change the current hard-back book requirement to soft-back, and to request formally that school boards purchase one-year consumable soft-back books for students to use at home. Although this study did not find that the method of teaching expository text structure with annotation produced higher comprehension scores than the method of teaching vocabulary, teacher education-- based on other studies-- needs to include training and practice of various reading comprehension strategies, particularly text structure with annotation, and students must learn to apply these strategies independently when reading expository text. Our nation is experiencing a “fourth-grade slump” in literacy achievement and progress across schools (Chall, Jacobs, & Baldwin, 1990), as well as a “crisis in male education” (Costillo, 2005). Alarmingly, only 31 percent of college graduates can read and comprehend a complex book.

Our academic forecast should be and could be brighter.
LIST OF REFERENCES


Blair, H., & Sanford, K. (1999, November). *Boys will be boys: Expanding literacy horizons for boys*. Paper presented at annual meeting of the National Council of Teachers of English, Denver, CO.


Harris, J. (1990, November). Text annotation and underlining as metacognitive strategies to improve comprehension and retention of expository text. Paper presented at the meeting of the National Reading Conference, Miami, FL: (ERIC Document Reproduction Service Bo. ED 335669).


APPENDICES
Appendix A: Review of the Literature

I. Introduction
   A. Strategic instruction
      1. Changing views and focuses of study strategies and strategy training
      2. Generalizations relevant to strategic instruction
      3. Strategy training with poor comprehenders
   B. Strategic instruction and expository text
      1. Difficulties comprehending expository text
      2. Analysis of text structure
      3. Use of multiple comprehension strategies
      4. Inefficient instruction

II. Knowledge and use of effective comprehension strategies
   A. Metacognition and strategy use
   B. Less proficient comprehenders’ reading strategies
      1. Limited knowledge about strategies
      2. Lack of organized knowledge base
      3. Limited comprehension of system functions
      4. Text structure unawareness
      5. Metacognitive insufficiencies
   C. Strategic readers
      1. Regulate different strategies for various tasks
      2. Know and use more strategies
   D. Contradictory results of studies
      1. Types of reading passages
      2. Information gathered differently
      3. Intellectual ability unaccounted
      4. Difficulty level of passages

III. Students’ awareness of top-level structure on comprehension and recall
   A. Basic types of text structures
      2. Five structures by Mason and Au (1986) and Vacca and Vacca (1986)
         a. Text units and text frames
         b. Science frames by Lunzer, Davies, and Green (1980)
      5. Other organizational patterns
   B. Multiple strategies to enhance the use of text structure
      1. Annotation
      2. Signal words
      3. Spatial organizers
      4. Generating questions
Appendix A: (Continued)

a. Self-questioning instruction and practice
b. Self-questioning combined with prediction

5. Combining all strategies

C. Effects of text structure on comprehension and recall
   1. Moderator variables
      a. Student age and grade level
      b. Reading ability
      c. Certain text structures easier to recognize and improve recall
   2. Positive effects
      a. Identifying and recalling of significant ideas
      b. Asking relevant questions
      c. Solving problems and writing summaries
      d. Identifying text structure and remembering text information

D. Kletzien’s study (1992)
   1. Description of study
   2. Results
   3. Limitation

E. Exposing children in primary grades to informational text
   1. Prepares for reading and writing informational text
   2. Motivates to read
   3. Provides valuable experiences through activities

III. Relationship of annotation textmarking to expository text and reading comprehension

A. Description and importance of annotation as a reading and study strategy
   1. Annotation correlated with test performance among college students
   2. Annotation chosen by college developmental students
   3. Annotation regarded as favorite strategy by strategy learning students

B. Organizing informational text: text structure and annotation
   1. Cognitive processes
   2. Using top-level structure
   3. Main ideas
      a. Practice in finding main idea
      b. Placement of main ideas by real authors in the past
   4. Types of annotation problems
      a. Problems college freshmen have with annotation
         1. Medieval monk syndrome
         2. Nothin’ here syndrome
         3. Rest of the story syndrome
      b. Practical teaching suggestions
      c. Other problems and teaching suggestions
   5. Considerations for annotation instruction
      a. Time and practice
      b. Various texts
Appendix A: (Continued)

c. Strategy benefits
d. Immediate feedback

6. Inconsistent findings

IV. The relationship of vocabulary development and reading comprehension

A. Introduction to relationship between vocabulary and reading ability
B. Vocabulary knowledge and reading achievement
   1. Four hypotheses of comprehension and vocabulary relationship
   2. Students’ beliefs
   3. Difficulty with technical vocabulary

C. Vocabulary development
   1. Acquisition of words and growth of vocabulary
   2. Four states of knowing a word
   3. Multiple Exposure Vocabulary Method

D. Vocabulary instruction
   1. Differing views on the most effective methods of instruction
   2. Results from various research studies
   3. Three major categories of word learning strategies
      a. Learning words through context
         1. Arguments for and against using context clues
         2. Suggestions for effective use
      b. Analyzing word structure
         1. Morphemic analysis
         2. J. K. Rowling and Harry Potter books
         3. Seven principals when teaching word studies
      c. Dictionaries and definitions
         1. Role in vocabulary learning and instruction
         2. Limitations and difficulties with dictionary definitions
      d. Vocabulary testing
         1. Three categories of vocabulary tests

V. Gender differences and academic achievement

A. Little current literature on gender differences and reading achievement
   1. Gender science
      a. Description of “brain science”
      b. Differences between males and females
         1. Physiological
         2. Biochemical
         3. Neurological
   2. Gender and academic achievement
      a. Environmental factors
         1. In play activities
         2. In school classroom
Appendix A: (Continued)

b. Differences in early school years
c. Early maturation of girls
d. Other findings
   1. Reading attitudes
   2. Girls superior to boys in reading achievement

IV. Summary and synthesis
   A. Theoretical and empirical base for present study
   B. Brief review of significance of study
There are five kinds of structure commonly found in expository texts. A definition of each structure is followed by an example to illustrate its meaning.

1. **Simple Listing.** The exact order of the information presented is of little importance. Descriptions or definitions of things, events, or ideas, along with examples are often given.

   Notice the lines of a globe that run across from left to right. They are called lines of latitude, and they form circles that run in the same directions as the equator. The smallest circles are near the north and south poles and the largest circles are near the equator. These lines measure how far north or south of the equator places are. (The text further defines other terms.)

2. **Ordered Listing.** Ordered listings in texts follow a time sequence, spatial dimensions, procedural steps (for example, the stages of cell reproduction), or other types of order.

   The first Europeans to come to America settled along the Atlantic coast. They knew very little about the territory beyond the coast. Soon after the American Revolution, more people crossed the ocean. Families needed places to live and grow crops. Sometimes several families formed a small settlement, usually near a river or stream. As spaces for farming were taken, the frontier kept moving westward. Wilderness turned into settlements and settlements into towns.

1. **Comparison and Contrast.** This structure is based on a description of similarities and differences, or statements of the pros and cons of two or more objects, approaches, concepts, or points of view. The paragraph below follows a previous paragraph that had described the characteristics of globes.
Appendix B: (Continued)

Flat maps are often more useful than globes because you can see the whole world at one time. You can make maps of small parts of the world. For example, you could make a map of our state or city. A flat map distorts the real surface. Only a globe can show the rounded surface of our planet.

4. **Cause and Effect**. In this structure, one or more antecedents are described which lead to a result, effect, or conclusion. The following paragraph illustrates the cause and effect relationship between Europeans' need for money and the discovery of America.

In Europe during the fifteenth century, many small kingdoms joined into large nations. These large nations began to fight with each other and they needed money for their soldiers. One way to get money was by trading. One of these new nations, Spain, was interested in trading with China and India, but the only route people know about was around Africa. In 1492, Spain sent out a small fleet of three ships to find a new route to the East. They sailed across the Atlantic Ocean. Instead of finding China, the three ships discovered America.

5. **Problem and Solution**. A problem or problems are stated and the solution or solutions are then described.

Many deer were killed each year by cars traveling on the Kansas State Turnpike. To avoid such accidents, turnpike police had high-pitched whistles mounted on their patrol cars. The wind-activated devices, audible only to animals, scared the deer off the highway. Car-deer collisions were reduced and the lives of many deer were saved.

Appendix C: Examples of Basic Text Structures

Description

The gaucho was a fierce-looking character. His hair was long and his face was bearded. The sun and wind made his skin dark and tough. His teeth gleamed white and his dark eyes shone. There was no mistaking the special clothes he wore. His narrow-brimmed felt hat was fastened under his chin with a rawhide cord. He wore a loose-fitting jacket and a scarf tied around his neck. His pants were baggy and sometimes had lace at the bottom of the legs. His wide leather belt was ornamented with silver coins kept brightly polished. On his feet were boots made from untanned skin taken from a colt’s leg. The end of the boot was opened so that the gaucho’s toes could grasp the buttons at the end of the straps that hung from his saddle.


Temporal Sequence

Sod houses were usually built on a slight rise or hillside to escape flooding. First, a floor space was leveled out with spades. This was wet and tramped down until solid. The next step was to cut bricks from the sod. Then the bricks were laid to make the walls. When the walls were about three feet high, simple wooden frames for the doors and windows were put in place. Finally, the roof, made with cedar beams and sod bricks, was put on.


Explanation

Action of Frost

In cold or mountainous regions, rocks are often subjected to the action of freezing water because of daily changes in the temperature. During the day, when the temperature is above the freezing point of water (0 degrees C), rainwater or melted snow or ice trickles into cracks in the rocks. During the night, when the temperature falls near the freezing point of water, the trapped water expands as it changes into ice.

As freezing water expands, the expanding ice pushes against the sides of the cracks with tremendous force, splitting the rocks apart. In this way, large masses of rock, especially the exposed rocks on the tops of mountains, are broken into smaller pieces. Frost often has the same effect on the paved streets of our cities. During the winter, water trapped in cracks in the pavement freezes into ice. The ice may expand enough to crack and loosen the pavement. Potholes develop from such cracks.

Appendix C: (Continued)

**Definition-Example**

Fungi

Like the algae, the fungi are simple in structure and lack roots, stems, and leaves. Unlike the algae, fungi lack chlorophyll and cannot make their own food. Examples of fungi are *bacteria, yeasts, molds, and mushrooms.*

(The text goes on to define bacteria, yeasts, molds, and mushrooms.)


**Comparison-Contrast**

There is a likeness in location between the central valley of Chile and the central valley of California. These two valleys are alike in other ways. Both have thousands of acres of excellent agricultural land. Soil washed down from the mountains has, in both countries, built deep, fertile valley land. Both central valleys have a mild climate. In both, water is available for irrigation. Under these favorable circumstances, a wide variety of agricultural products can be grown. Both California and Chile are known for the table grapes, raisins, and wine produced in their vineyards. Melons, citrus fruits, and other subtropical products are widely grown. Thus the central valley of Chile, like the similar valley in California can support a large farm population.


**Problem-Solution**

A coffee boom followed the sugar boom and the gold boom. When the Brazilians discovered that the coffee tree, a native of Africa, flourished in the red soil of the South, coffee trees were planted by the thousands. Later on, they were planted by the millions. Fortunes were made in “brown gold,” as coffee was known.

But so much coffee was produced that the people of the world could not use all of it. Coffee was stored in warehouses, coffee was burned, coffee was dumped into the sea. This was done in an effort to keep the price from falling to the point where all the planters would be ruined. To make the problem yet more serious, other Latin American nations extended their coffee plantations, and African countries also began to have coffee plantations.

The Brazilian government took steps to save the situation. Planters were encouraged to destroy many of their coffee trees and grow other crops. The amount of coffee put on the market in any one year was regulated. Meanwhile, Brazil sought an agreement between the nations that exported coffee and the nations that ...

## Appendix D: Text Units and Commonly Associated Words and Phrases

### Description

(This text unit is often not associated with particular words and phrases. There may be words and phrases. There may be mention of characteristics, properties, features, traits, and functions, but they are not specifically signaled.)

<table>
<thead>
<tr>
<th>Temporal Sequence/Process</th>
<th>then, and then</th>
<th>previously</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>before</td>
<td>prior</td>
</tr>
<tr>
<td></td>
<td>after</td>
<td>subsequently</td>
</tr>
<tr>
<td></td>
<td>next</td>
<td>precedes</td>
</tr>
<tr>
<td></td>
<td>follows</td>
<td>afterwards</td>
</tr>
<tr>
<td></td>
<td>earlier</td>
<td>first, second, third</td>
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<td></td>
<td>later</td>
<td>(dates)</td>
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<td></td>
<td>finally</td>
<td></td>
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</table>

### Explanation

<table>
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<tr>
<th></th>
<th>causes</th>
<th>because</th>
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<tbody>
<tr>
<td>affects</td>
<td>enables</td>
<td></td>
</tr>
<tr>
<td>leads to</td>
<td>since</td>
<td></td>
</tr>
<tr>
<td>in order to</td>
<td>as a result (of)</td>
<td></td>
</tr>
<tr>
<td>so that</td>
<td>consequently</td>
<td></td>
</tr>
<tr>
<td>produces</td>
<td>thus</td>
<td></td>
</tr>
<tr>
<td>therefore</td>
<td>for this reason</td>
<td></td>
</tr>
</tbody>
</table>

### Compare/contrast

<table>
<thead>
<tr>
<th></th>
<th>is similar to</th>
<th>on the other hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>similarly</td>
<td>however</td>
<td></td>
</tr>
<tr>
<td>like</td>
<td>but</td>
<td></td>
</tr>
<tr>
<td>likewise</td>
<td>although</td>
<td></td>
</tr>
<tr>
<td>in the same way</td>
<td>instead</td>
<td></td>
</tr>
<tr>
<td>is different from</td>
<td>yet</td>
<td></td>
</tr>
<tr>
<td>on the one hand</td>
<td>while</td>
<td></td>
</tr>
</tbody>
</table>

### Definition/Examples

<table>
<thead>
<tr>
<th></th>
<th>is defined as</th>
<th>for instance</th>
</tr>
</thead>
<tbody>
<tr>
<td>means that</td>
<td>type of</td>
<td></td>
</tr>
<tr>
<td>is named</td>
<td>kind of</td>
<td></td>
</tr>
<tr>
<td>is called</td>
<td>example of</td>
<td></td>
</tr>
<tr>
<td>is labeled</td>
<td>e.g.</td>
<td></td>
</tr>
<tr>
<td>is referred to as</td>
<td>such as</td>
<td></td>
</tr>
<tr>
<td>that is</td>
<td>includes</td>
<td></td>
</tr>
<tr>
<td>for example</td>
<td>including</td>
<td></td>
</tr>
</tbody>
</table>
Appendix D: (Continued)

Problem/Solution

the problem is . . .
the solution is . . .

(This text unit is often not associated with particular words and phrases. There may be mention of problems or difficulties and their solutions or cures, but often the problems and solutions are not specifically signaled.)
# Appendix E: A Listing of Several Frames and Their Corresponding Questions From Secondary Science Textbooks

<table>
<thead>
<tr>
<th>Frame</th>
<th>Purpose of Frame</th>
<th>Question Slots in the Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Parts</td>
<td>To describe and explain structure or parts, for example, plant roots, teeth, nervous system.</td>
<td>Give the name of the part. Describe its location. Describe the part. Explain function of the part.</td>
</tr>
<tr>
<td>2. Mechanisms</td>
<td>To describe and explain mechanisms such as the aneroid barometer, and the bicycle pump.</td>
<td>Give the name of it. Explain how it works. Explain its function. Describe its location.</td>
</tr>
<tr>
<td>3. Processes</td>
<td>To explain transformations over a period of time, such as the formation of limestone</td>
<td>Give the name of it. Describe when it takes place and its duration. Describe its location. Explain the function of the process.</td>
</tr>
<tr>
<td>4. Scientific</td>
<td>To describe and explain patterns of thinking about observed phenomena in the word and tests of those patterns such as the theory of evolution and of spontaneous generation.</td>
<td>Give the hypothesis/question/problem. Describe the theory. Explain tests of its validity. Describe the scientist(s) who work with it. Explain applications of it.</td>
</tr>
</tbody>
</table>

### Appendix F: School Demographics

<table>
<thead>
<tr>
<th>Grade Divisions</th>
<th>Total</th>
<th>Avg. Class Size</th>
<th># of 3rd Grade</th>
<th>Tot. # of Third Graders</th>
<th>Tuition Cost ($)</th>
<th>Year Est.</th>
<th>Church Affiliation</th>
<th>Admin.</th>
<th>Teacher Faculty</th>
<th>S/T Ratio</th>
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<tbody>
<tr>
<td>1 Early Childhood, pre-K - Grade 1; Elementary, Grades 2-5; Middle, 6-8</td>
<td>420</td>
<td>21</td>
<td>2</td>
<td>36</td>
<td>50/50</td>
<td>1956</td>
<td>Lutheran</td>
<td>Principal</td>
<td>24 full-time, 4 part-time</td>
<td>13.2</td>
</tr>
<tr>
<td>2 Pre-school, ages 2-4; Elementary, Grades K-5; Middle, 6-8</td>
<td>170</td>
<td>12</td>
<td>1</td>
<td>15</td>
<td>50/50</td>
<td>1988</td>
<td>Non-denom</td>
<td>Preschool director; school administrator is principal of eie/middle school</td>
<td>18 full-time, 10 part-time</td>
<td>9.5</td>
</tr>
<tr>
<td>3 Preschool, 2-5; Elementary, Grades K-5; Middle, 6-8</td>
<td>380</td>
<td>16</td>
<td>2</td>
<td>34</td>
<td>50/50</td>
<td>1968-1993</td>
<td>Lutheran</td>
<td>Principal</td>
<td>38</td>
<td>10</td>
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<tr>
<td>4 Pre-kindergarten, 2, 3, 4, yr. Old; elementary, K-5, middle</td>
<td>900</td>
<td>17</td>
<td>3</td>
<td>60</td>
<td>40/60</td>
<td>1977</td>
<td>Baptist</td>
<td>HeadMaster, Assistant Headmaster, Two Principals</td>
<td>68</td>
<td>17</td>
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<tr>
<td>5 Early Childhood, pre-K - K: Elementary, Grades 1-5; Middle, Grades 6-8</td>
<td>185</td>
<td>20</td>
<td>1</td>
<td>18</td>
<td>50/50</td>
<td>1982</td>
<td>Lutheran</td>
<td>Principal</td>
<td>16 full-time, 4 part-time</td>
<td>11.5</td>
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<tr>
<td>6 Early Childhood, pre-K - K: Elementary, Grades 1-5; Middle, Grades 6-8</td>
<td>519</td>
<td>28</td>
<td>2</td>
<td>46</td>
<td>45/51</td>
<td>1953</td>
<td>Catholic</td>
<td>Principal</td>
<td>22, not including specialist teachers</td>
<td>28</td>
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<tr>
<td>7 Pre-K - 3 &amp; 4 yr. Old; Elementary, Grades K-5; Middle, 6-8</td>
<td>330</td>
<td>30</td>
<td>1</td>
<td>33</td>
<td>50/50</td>
<td>1930</td>
<td>Catholic</td>
<td>Principal</td>
<td>18</td>
<td>18.3</td>
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<td>8 Elementary, Grades K-5; Middle school, 6-8</td>
<td>264</td>
<td>30</td>
<td>1</td>
<td>29</td>
<td>50/50</td>
<td>1964</td>
<td>Catholic</td>
<td>Principal</td>
<td>15</td>
<td>17.6</td>
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<tr>
<td>9 Pre-K, K-8</td>
<td>249</td>
<td>25</td>
<td>1</td>
<td>24</td>
<td>50/50</td>
<td>1964</td>
<td>Catholic</td>
<td>Principal</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>10 Multigrade K-5</td>
<td>52</td>
<td>13</td>
<td>1</td>
<td>3</td>
<td>50/50</td>
<td>1974</td>
<td>Non-denom</td>
<td>Co-directors</td>
<td>5 full-time, 4 part-time</td>
<td>13</td>
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<tr>
<td>11 K-5; 6-8; 9-12</td>
<td>620</td>
<td>22</td>
<td>2</td>
<td>36</td>
<td>50/50</td>
<td>1953</td>
<td>Non-denom</td>
<td>Head Administrator; Elementary</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>12 Pre-K-4, 5-12</td>
<td>410</td>
<td>18</td>
<td>2</td>
<td>37</td>
<td>50/50</td>
<td>1968</td>
<td>Non-denom</td>
<td>Head of School; Upper Director, Lower Director</td>
<td>50</td>
<td>18</td>
</tr>
<tr>
<td>13 K-5</td>
<td>290</td>
<td>19</td>
<td>2</td>
<td>25</td>
<td>50/50</td>
<td>1920</td>
<td>Non-denom</td>
<td>Principal</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>14 K-5</td>
<td>180</td>
<td>22</td>
<td>2</td>
<td>23</td>
<td>50/50</td>
<td>1962</td>
<td>Catholic</td>
<td>Principal</td>
<td>18</td>
<td>22</td>
</tr>
</tbody>
</table>
GET A JUMP-START ON 4TH GRADE!

2004 SUMMER READING COMPREHENSION WORKSHOP
FOR PRE-FOURTH GRADERS!

In a 3-week workshop, students will have lots of fun while they actively participate in learning reading comprehension skills!

But wait! There’s more! It is part of a no-cost USF research study!

February 18, 2004

Dear Parents and Students,

As a doctoral candidate at USF, I am conducting a research study that includes two summer workshops for pre-fourth-grade students to help them prepare for the demands and expectations that await them in fourth grade. In the early years of school, children learn to read. Beginning in the fourth grade, they will be reading to learn. Most third-grade children need help in preparing them for this transition and the new challenges that await them in the next school year.

The reading workshops will provide motivational learning experiences with a variety of upbeat reading comprehension and vocabulary activities, such as “Skeleton Finders” and “Where in the World?” To accommodate different learning styles and make learning fun, the reading comprehension activities will be geared for individual, paired, and small group involvement.

Your school is one of 14 private schools invited to participate in this wonderful opportunity. The workshop classes will be held at St. Raphael’s Church School, 1376 Snell Isle Blvd. N. E. Another teacher will be in the room at all times to assist the researcher throughout the program. All learning materials will be provided!

The workshop program consists of a pretest, five class sessions, and two posttests (please refer to the enclosed schedule for dates and times).

The pretest will be given on April 17, 2004 at St. Raphael’s School. Based on the pretest results, students meeting the program’s reading skills criteria will be eligible for participation and randomly assigned to either reading comprehension group. Valuable and applicable learning skills and knowledge will be received by all participants.

There will be two separate 3-week workshop sessions with different students:

Session I: June 22- July 8, 2004
Session II: July 13- 27, 2004

Workshop classes will be held Tuesdays and Thursdays. Your child will either attend the morning classes (10:00 a.m.-noon) or early afternoon classes (1:00-3:00 p.m.). Each student will receive 10 hours of quality instruction and learning.
Appendix G: (Continued)

The posttest, given to determine growth in skills as a result of the workshop program, will be administered on the last day of class in each session. A second posttest will be given in the fall of 2004 to determine retention of skills (date and time to be announced).

Enclosed are two copies of a parental informed consent document. Please take the time to carefully read the consent document and read it to your child! Please make sure your child knows what the summer reading workshop is about and what it means to be a “volunteer.” At the end of the consent document are two lines for signatures if you choose to participate. One line is for the parent’s (or legal guardian’s) signature; the other line is for your child’s signature. One copy of the consent document is for you to keep. The signed copy is to be returned in the envelope to your child’s school.

Also enclosed is a yellow card to be checked “Yes” or “No” for participation. If “Yes,” parents can indicate their preferred choice of session. Two sessions are offered to accommodate your summer vacation. Although every effort will be made to accommodate your choice, session assignments cannot be guaranteed. If your schedule is flexible, please mark “either session.” If you choose to participate, please write your address (with zip code) and phone number on the lines provided on the card. Additional information and details about the workshop program will be sent to the homes of students who wish to participate.

**If you choose to participate, please enclose in the envelope a signed informed consent document and the card checked “Yes” with additional requested information. ** If you choose not to participate, please enclose in the envelope the card checked “No.” The envelopes are to be returned to your child’s school within one week.

I am most excited to provide your children with valuable learning experiences that will be lots of fun but, more importantly, be advantageous to them throughout their school years. After thirty-three years of teaching, I know how to make learning fun!

Sincerely,

Jan Gentry, B.A., M. A.
Ph.D. Candidate
State Certified Teacher
State Certified Reading Specialist

For your convenience, the dates and class hours for each session are summarized on the following page.
Appendix G: (Continued)

2004 SUMMER READING WORKSHOPS
DATES AND TIMES

Pretest: Saturday, April 17- morning and afternoon times to be announced

<table>
<thead>
<tr>
<th>Workshop classes:</th>
<th>Morning group</th>
<th>Afternoon group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10:00 a.m. – noon</td>
<td>1:00 p.m. – 3:00 p.m.</td>
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</tbody>
</table>

Session I

Week 1
Tuesday, June 22
Thursday, June 24

Week 2
Tuesday, June 29
Thursday, July 1

Week 3
Tuesday, July 6
Thursday, July 8

Session II

Week 1
Tuesday, July 13
Thursday, July 15

Week 2
Tuesday, July 20
Thursday, July 22

Week 3
Tuesday, July 27
Thursday, July 29

Posttest: (last day of class) Session I- Thursday, July 8  Session II- Thursday, July 29

Follow-up test: Fall, 2004- day and time to be announced
Appendix H: Curriculum for TSA Group

Session I  (morning hours 10:00 a.m. - 12:00 noon)

Week 1  Tuesday, June 22:  paragraph topics, stated main ideas, first text structure model- definitions and examples

- Introduction of importance and use of text structure with overhead projector and transparency of the human skeleton

- Introduction of importance and use of annotation; teacher models annotation on transparency of various paragraphs from the students’ school’s fourth-grade texts

- Discussion of topic of a paragraph; teacher models thought process of how to decide on topic of a paragraph; multiple choice activity for choosing correct topic among related words

- Discussion of main ideas and where main ideas are usually found within paragraphs; discussion of important supporting facts; students underline main ideas in paragraph excerpts from their school’s fourth grade texts while teacher underlines main ideas on transparencies

- Students are grouped into pairs so they can decide what sentences are to be highlighted as the stated main ideas in paragraphs from their school’s fourth grade texts; students compare their main ideas to those on the transparencies; teacher shows one paragraph at a time, modeling the thinking process of finding the main idea

- Paragraph excerpts of first text structure model: definitions and examples; modeling of annotation on transparencies while students annotate on copies

- Text passages from Getting the Main Idea by Boning that contain first text structure model: definitions and examples; modeling of annotation on transparencies while students annotate on copies

- Practice exercises with various paragraphs (from their schools’ fourth-grade science and social studies texts) which contain first structure model; exercises done in small group, paired, and individual activities

  Thursday, June 24: Second text structure model- simple listing

- Paragraph excerpts of second text structure model: simple listing; modeling of annotation on transparencies while students annotate on copies
Appendix H: (Continued)

- Text passages from *Getting the Main Idea* by Boning that contain second text structure model; modeling of annotation on transparencies while students annotate on copies.

- Practice exercises with various paragraphs (from their schools’ fourth-grade science and social studies texts) that contain the first and second structure models; exercises done in small group, paired, and individual activities.

**Week 2  Tuesday, June 29:** Third text structure model - *ordered listing*

- Paragraph excerpts of third text structure model: ordered listing; modeling of annotation on transparencies while students annotate on copies.

- Text passages from *Getting the Main Idea* by Boning that contain third text structure model; modeling of annotation on transparencies while students annotate on copies.

- Practice exercises with various paragraphs (from their schools’ fourth-grade science and social studies texts) that contain the first, second, and third structure models; exercises done in small group, paired, and individual activities.

  **Thursday, July 1:** Fourth text structure model - *comparison/contrast*

- Paragraph excerpts of fourth text structure model: comparison/contrast; modeling of annotation on transparencies while students annotate on copies.

- Text passages from *Getting the Main Idea* by Boning that contain fourth text structure model; modeling of annotation on transparencies while students annotate on copies.

- Practice exercises with various paragraphs (from their schools’ fourth-grade science and social studies texts) that contain the first, second, third, and fourth structure models; exercises done in small group, paired, and individual activities.

**Week 3  Tuesday, July 6:** Fifth and sixth text models - *cause/effect* and *problem/solution*

- Paragraph excerpts of fifth and sixth text structure models: cause/effect and problem/solution; modeling of annotation on transparencies while students annotate on copies.

- Text passages from *Getting the Main Idea* by Boning that illustrate fifth and sixth text structure models; modeling of annotation on transparencies while students annotate on copies.
Appendix H: (Continued)

- Practice exercises with various paragraphs (from their schools’ fourth-grade science and social studies texts) that 1) illustrate one of the six structure models and 2) contain multiple text structures; exercises done in small group, paired, and individual activities

  Thursday, July 8

- SDRT4 Form K (immediate posttest) given

  Session II  (afternoon hours 1:00 p.m. - 3:00 p.m.) Above curriculum will be repeated.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Tuesday, July 13</th>
<th>Thursday, July 15</th>
</tr>
</thead>
<tbody>
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<td>Tuesday, July 20</td>
<td>Thursday, July 22</td>
</tr>
<tr>
<td>Week 3</td>
<td>Tuesday, July 27</td>
<td>Thursday, July 29</td>
</tr>
</tbody>
</table>
Appendix I: Curriculum for VK Group

Session I  (afternoon hours 1:00 p.m.- 3:00 p.m.)

Week 1  Tuesday, June 22: Idioms, similes, metaphors, and multiple meanings

- Introduction of importance and use of vocabulary knowledge
- Introduction to figures of speech using newspaper comic strips as examples of idioms, similes, metaphors, and multiple meanings
- Class discussion of how some words are not meant to be read literally; students give examples of figures of speech
- Students are grouped into pairs; worksheets from *Idioms and Proverbs* by Remedia Publications (2000) provide ample practice for choosing correct meaning for idioms; students check answers as teacher uses transparencies to show answers
- Students are given lists of popular idioms, plain white paper, and colored markers; students choose any two idioms, write idioms on papers, and draw a picture for each
- Students show their idiom pictures to class
- Students are grouped into pairs; worksheets from *Similes and Metaphors* by Remedia Publication (2000) give practice in recognizing these figures of speech and writing their own; students share their sentences with the class
- Words with multiple meanings discussed; class activity with students verbally using the same word in sentences that give the word different meanings (e.g., *roll* - I roll down the hill.  I like butter on my roll.)

Thursday, June 24: Antonyms and synonyms

- Discussion of antonyms and synonyms, and how to use sentence clues to understand meaning
- Transparencies of crossword puzzles from *Word Games, Grades 3-4* by Newmaster (2003) and student copies; students grouped in pairs to fill in crossword puzzles; answers checked as teacher shows one crossword at a time, discussing with students some of the more challenging and difficult words
Appendix I: (Continued)

- Copies of newspaper comic strips given to students for activity with synonyms; students circle at least one word from each comic strip and write a synonym in the word bank for each word circled; students read the “new” comic strips to class

- Antonym game: Students are divided into 2 groups; students in each group are numbered; first student in one group says a word and first student in the other group must give an antonym for that word or drop out of the group; group with most students wins

Week 2  Tuesday, June 29: Prefixes and roots

- Teacher discusses importance of prefix meanings; teacher shows transparencies of prefixes and roots that can be combined to form new words; students give examples of words that have prefixes and explain the new word meanings

- Students are given copies of prefixes and their meanings, a Prefix Bank, to be used in next activity; prefix meanings are discussed and example given

- Students are given copies of sentences with their names in them; new words with prefixes are listed at the bottom of the page; students fill in the correct word in the sentence based on the cues in the sentence and prefix meanings in the Prefix Bank

- Teacher reviews correct answers in all sentences, one sentence at a time, on transparencies and discusses why each word shown is the correct choice

- Teacher divides students into pairs for next activity: students are given paragraph excerpts from their schools’ fourth-grade texts; students circle at least one word with a prefix in each paragraph; students write meaning of circled words based on the cues in the sentences and the prefix meanings in the Prefix Bank

Thursday, July 1: Analogies and vocabulary webs

- Teacher explains what an analogy is and shows transparencies of 12 analogy categories (e.g., location, characteristics, part to whole, whole to part) with an example of each (e.g., part to whole- finger:hand); students practice giving analogies with words on transparencies (e.g., finger:hand  petal: _____)

- Using vocabulary webs, the teacher shows on transparencies (and on the white board) how to make analogy connections between the first pair of words and the second pair of words shown in the 12 analogy categories

- Students are grouped into pairs; crossword puzzles from Word Games, Grades 3-4 (Newmaster, 2000) are given to provide ample practice with analogies
Appendix I: (Continued)

- With a transparencies of each crossword puzzle, teacher models the thinking process of choosing the appropriate word for the analogy; inappropriate words that students chose are discussed so to clarify the relationship between the words

- Students are given practice in choosing analogies and drawing vocabulary maps to show word relationships

Week 3  **Tuesday, July 6: Context clues**

- Teacher explains what context clues are and their importance in reading new words; transparencies are shown with various sentences containing different kinds of context clues

- Modeling of how to use four types of context clues in sentences; overhead projector and transparencies used by instructor
  Types: 1) direct definition, 2) appositive, 3) synonym and antonym, and 4) surrounding sentences

- Teacher highlights context clues and discusses how the clues help readers figure out new words

- Paired students activity- practice in using new words in other sentences written on transparencies by students; students present sentences on overhead and read to class; class discussions and comments

- Students are grouped in pairs and given copies of paragraph excerpts from their schools’ fourth-grade texts; at the bottom of each page of paragraphs are technical vocabulary words from the different text chapters

- For each paragraph, students underline the context clues and write the correct vocabulary word in the blank in the paragraph

- For each paragraph on the transparencies, the teacher models the thinking process of choosing the context clues, underlines the context clues, and writes the correct vocabulary word; students’ mistakes are discussed to clarify the use of context clues and how they help understand new words

  **Thursday, July 8**

- SDRT4, Form K given as an immediate posttest
Appendix I: (Continued)

Session II  (morning hours 10:00 a.m.- 12:00 noon) Above curriculum will be repeated.

<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
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<td>Thursday, July 15</td>
</tr>
<tr>
<td>Week 2</td>
<td>Tuesday, July 20</td>
<td>Thursday, July 22</td>
</tr>
<tr>
<td>Week 3</td>
<td>Tuesday, July 27</td>
<td>Thursday, July 29</td>
</tr>
</tbody>
</table>
Appendix J: Paragraph Examples From *Getting the Main Idea*

1. A paragraph that illustrates a simple listing:

   If we look under a city, we would be surprised by the number of layers of tunnels and passageways that crisscross. One layer may contain tunnels for subway trains. Another layer may be designed for people walking to hotels and shops and railroad stations. Another layer may be for sewers. Other tunnels may be for gas, electric cables, telephone wires, and water pipes (p. 9).

1. A paragraph that illustrates an ordered listing:

   Long ago when very poor men didn’t have money to pay for a bed, they paid a penny to sleep on a clothesline. A long rope was stretched across a cellar. The men would lean their backs on the rope, hook their arms back over it, and put their hands in their pockets. In the morning the owner could wake up his guests by cutting the rope! (p. 20).

2. A paragraph that illustrates comparison/contrast:

   People did not always eat lunch. For hundreds of years people just had breakfast and dinner. Lunch first started as a snack to fill the long wait between breakfast and dinner. Lunch was small over two hundred years ago. People ate only as much food as a hand could hold. Today, lunch is a much bigger meal than in those days (p. 9).

3. A paragraph that illustrates problem/solution and simple listing:

   Bananas are not fit to eat if they ripen on the plants. If bananas are allowed to turn yellow on the plant, they lose their good flavor. What is worse, the skin breaks open and insects eat the fruit. The banana rots rather than ripens. Only when bananas are picked while the fruit still has a green color are they desirable for food (p. 15).

5. A paragraph that illustrates a definition and a simple listing of description:

   People in the mountain villages of Switzerland live in houses called chalets (shall-lays). They are made of wood, often with stone foundations. Usually these unpainted house are three stories high, sometimes even higher. A heavy, steep roof overhangs the house to protect it from snow and rain. There is a balcony around the second floor (p. 5).

6. A paragraph that contains two definitions:

   Most people know that a schooner is a ship, a two-masted sailing ship. Not many people know how this word started. In the early days of America people used the word “scoon” to mean skim or move quickly over the water. Since these sailing ships moved very fast over the surface, they came to be called schooners (p. 23).
Appendix J: (Continued)

7. A paragraph that illustrates cause/effect:

The howl of wolves struck terror into the hearts of the early settlers. They could hardly afford to lose their sheep, their source of food and warm clothing, to the fangs of wolves. Thus it was that wolf hunting became a necessary sport. Fame, glory, and rewards went to hunters who nailed bloody wolf heads to the meetinghouse doors (p. 23).

(Boning, R., 1970). *Getting the main idea*, D. New York: Barnell Loft, LTD.
Appendix K: Examples of TSA Students’ Practice Sheets

for Progression of Skill Attainment

Topics

Stated Main Ideas

Supporting Facts

Charting and Predicting Test Question
Appendix K-1: Topics

1. soup   water   liquid   gasoline   coffee
2. potato chips   pretzels   peanuts   snack   fruit
3. tv   concerts   entertainment   games   movies
4. bottles   cans   boxes   bags   container
5. dog   cat   pet   parrot   iguana
6. housing   tepee   palace   apartment   house
7. magician   performer   comedian   actress   clown
8. tinsel   colored lights   streamer   balloon   decoration
9. pants   dress   shirt   clothing   coat   shorts
10. beetles   grasshoppers   cockroaches   insects   ants
11. mysteries   fairy tales   poems   science fiction   book
12. buildings   church   school   bank   hospital   store
13. forks   utensils   knives   spoons   chopsticks
14. star   sun   universe   planet   moon   galaxy
15. tennis   golf   swimming   sport   biking
16. granite   rock   marble   slate   quartz
17. tree   oak   fir   cypress   apple
18. leaf   stem   flower   root   plant
19. smell   taste   sense   touch   hear   see
Appendix K-2: Stated Main Ideas

Hey—What’s the Big Idea?

1. There are many types of fungi. One type is called a slime mold. Slime molds have no definite shape. They are able to move from one place to another. Yeasts are fungi that are too small to be seen without a microscope. Fungi called rusts, smuts, and rots grow on other plants and harm them. Molds that grow on food are still other types of fungi.

2. Do you live in or near a large city? In many cities, air pollution is a serious problem. As you read in Chapter 1, cars that run on gasoline pollute the air. Many cars crowded together can make the air unhealthy. Using electric cars may be one way to solve this problem. These cars run on batteries, which results in less pollution.

3. Not all waves are formed by the wind. Some waves are caused by earthquakes in the bottom of the ocean. These earthquakes cause a giant wave to form. A giant wave formed by an earthquake is called a tsunami (tsu’na’me). A tsunami can destroy whole towns as it crashes onto the shore.

4. Most Lakota were unhappy with life on the reservation in South Dakota. They were not allowed to travel freely. They had to depend on the government for food. Many government agents, who ran the reservations, did not treat them fairly. For example, the agents did not always give the Lakota the food and supplies that had been promised.

5. Plants and animals need more than just food to survive. They also need water. Many animals drink water every day from water holes, ponds, lakes, rivers, and streams. A budgerigar (bu’jər ĕg’ər), an Australian parakeet, can go a long time without taking a drink. But when it’s time for that drink, the bird will probably flock together with tens of thousands of other budgerigars at one water hole.

A few animals hardly ever, or even never, drink! A kangaroo rat rarely drinks. It gets its water from the seeds and cactus pulp that it eats. An Australian koala never needs to drink. It gets the water it needs by eating eucalyptus (yo’o ko lip’tas) leaves.
Appendix K-3: Supporting Facts

1. Every four years voters in the United States elect a President. The President is the highest elected official in the United States. Every President except George Washington has worked and lived in the White House. It was designed by James Hoban, an Irish-born immigrant.

In the center of each village was the village common. A common is a grassy area that is shared by everyone in the community. Near the common was the meeting house, which also served as the church.

2. The Pledge of Allegiance is a patriotic oath that was written more than 100 years ago. By reciting it, we promise our allegiance, loyalty, to our flag and to our nation.

3. Soil doesn’t just happen. A well-developed soil is made up of layers that take many years to form. A side view of the different layers, called a soil profile, is shown below.

4. Since water vapor is needed to form a cloud, you will see many clouds in places where the air is very moist. In places where the air is dry, you will see fewer clouds. For example, you will not see many clouds over a desert.

5. Another Italian, Giovanni da Verrazano (verb-rah-zah-noh) searched for the Northwest Passage for the king of France. In 1524, Verrazano sailed to North America and explored the Atlantic Coast from the Carolinas to Canada. He did not find the Northwest Passage either, but the entrance to New York Harbor is now named after him.
Appendix K-4: Charting and Predicting Test Questions

Find the simple listing and other important info. Number the listing. Highlight other important info.

Today we know the Hodenosaunee (hoh den oh SAH nee) as the Iroquois, mostly because they spoke an Iroquoian language. The Hodenosaunee lived mainly in what is now New York State. They included five groups, the Seneca (SE nih kuh), the Mohawk, the Cayuga (kah YOO guh), the Onondaga (ahn un DAW gah), and the Oneida (oh Ni duh).

Put your listing in the form of a map or chart.

Test question: What five groups of Hodenosaunee?
Answer: Seneca, Mohawk, Cayuga, Onondaga, Oneida.
Appendix L: Examples of TSA Students’ Paragraphs Used For Mapping, Charting, and Predicting Test Questions

Text Structure Model: Simple Listing
Text Structure Model: Ordered Listing (Sequence)
Text Structure Model: Comparison/Contrast
Text Structure Model: Cause & Effect
Text Structure Model: Problem & Solution
Appendix L-1: Simple Listing

Foxes find or dig shelters in their environment. A gray fox may climb a tree to find a hollow place to hide in. An Arctic fox may dig into the snow for shelter during a blizzard. Desert foxes dig connecting tunnels under the sand to protect themselves from the desert heat.

Maps or chart:
- Climb to hollow in tree (gray fox)
- Dig tunnels under sand (desert fox)
- Dig into snow (Arctic fox)

3 ways foxes find or dig shelters

<table>
<thead>
<tr>
<th>Fox</th>
<th>Shelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>arctic</td>
<td>dig into snow</td>
</tr>
<tr>
<td>desert</td>
<td>dig tunnels under sand</td>
</tr>
<tr>
<td>gray</td>
<td>climb to hollow in tree</td>
</tr>
</tbody>
</table>

Test question: What are 3 ways foxes get shelters?
Answer:
Appendix L-2: Ordered Listing (Sequence)

Text Structure Model #3

Ordered listing aka Sequence

(order is a must)

1. Simple ordered listing— one thing after another in a sentence or one sentence after the other

Whale biologist Charles Jurasz discovered that humpback whales feed in a special way. These whales spin a net much as a spider spins a web. But the net is made of bubbles. First, the whale dives deep. Next, it swims upward in a circle while blowing air bubbles through its blowhole. The bubbles form a net that traps shrimplike animals called krill. Finally, the whale comes to the surface inside the net with its mouth wide open.

Test question: How does a whale eat?

Answer: —

<table>
<thead>
<tr>
<th>How humpback whales feed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. dives deep</td>
</tr>
<tr>
<td>2. swims up in a circle + blows air bubbles out of blowhole</td>
</tr>
<tr>
<td>3. bubbles form a net + trap krill</td>
</tr>
<tr>
<td>4. comes up to surface inside net with mouth open</td>
</tr>
</tbody>
</table>
Appendix L-3: Comparison/Contrast

Both the Hopi and the Navajo learned to survive in their desert environment. However, their cultures and ways of life were very different.

In 1890, Miami was a small fishing village. In 1890 only a few families lived in Miami. They lived along the Miami River. Today nearly 360,000 people live in the city of Miami. Only Jacksonville has more residents than Miami.

**1890**
1. small fishing village
2. **few families**

**Today**
1. huge city
2. **360,000 people**
Weather describes the air at a certain time and place. It may be hot or cold, rainy or dry, windy or calm. The weather may change very quickly.

Every place has a pattern of weather over many years. This is its Climate. What is the difference between weather and climate? Weather affects how you live day to day. Will you bring an umbrella to school today? Climate affects long-range plans. Will you buy a light jacket or a heavy overcoat for the winter?

<table>
<thead>
<tr>
<th>Weather</th>
<th>Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. what the air is like at a certain time and place</td>
<td>1. a pattern of weather over many years</td>
</tr>
<tr>
<td>2. affects how you live day to day</td>
<td>2. affects long-range plans</td>
</tr>
</tbody>
</table>

As you can see in this classification table, there are many groups of nonseed plants. One of these groups is made up of plants that have roots, stems, and leaves. Plants in this group do not have flowers. Ferns make up this group.

A second group of nonseed plants consists of plants that do not have true roots, stems, or leaves. This group includes mosses, fungi, and algae. These plants are sometimes called lower plants. AKA

<table>
<thead>
<tr>
<th>Nonseed Plants</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. have roots, stems, &amp; leaves</td>
<td>1. don't have roots, stems, or leaves</td>
<td></td>
</tr>
<tr>
<td>2. don't have flowers</td>
<td>2. called lower plants</td>
<td></td>
</tr>
<tr>
<td>3. ex. ferns</td>
<td>3. ex. mosses, fungi, &amp; algae</td>
<td></td>
</tr>
</tbody>
</table>
Appendix L-4: Cause & Effect

In every region, temperatures vary from season to season. Why are the Middle West's winters often so cold? Why are its summers so hot?

C1. The flat land is one of the causes. Winds blow across the plains carrying hot air in summer and cold air in winter. There are no mountains to block the way. If you've ever felt a cold wind, you know that it seems to make the temperature lower. This feeling is measured by what is called the wind-chill factor. In the summer hot winds on the plains seem to make the air even hotter.

C2. The location of the Middle West also affects its climate. You know that the region is far from the Atlantic and Pacific oceans. Its distance from these huge bodies of water has a big effect on its climate.

Middle West Climate

Effect: Winters are so cold & summers are so hot

Causes:
1. Flat land- winds & no mountains; wind-chill factor
2. Location- far from Atlantic & Pacific Oceans

Test question: Why are the winters in the Middle West so cold and hot?

Answer:
1. Flat land
2. Location
Appendix L-5: Problem & Solution

Text Structure Model #5

Problem & Solution

At the Mall

Have you ever been to a large indoor mall? You might be surprised to learn that the first such mall was built in the Middle West. What’s more, this type of mall developed because of the region’s climate.

In 1956, builders in Edina, Minnesota, wanted to build a shopping center. But people might not want to stroll from store to store in hot summers or cold winters.

To solve this problem, the builders decided to put one roof over all the stores. Their idea quickly caught on. By 1994 there were nearly 40,500 indoor malls in the United States.

Problem: builders wanted a shopping center, but they knew people wouldn’t go from store to store in lousy weather

Solution: builders put 1 roof over all the stores
Many Polish farmers work on land where the soil is not very fertile. It takes planning for them to keep their crops growing strong.

Many add fertilizers to the soil. As you read in Chapter 3, fertilizers put "food" for plants back into the soil. Like farmers in our country, Polish farmers also use pesticides. These chemicals kill insects that damage crops.

Problem: soil in Poland not fertile

Solutions: 1. add fertilizers  2. use pesticides

Test question: How did the Polish farmers keep their crops strong?
Appendix M: Sequential Order of Text Structure Models Within Paragraph Excerpts for
TSA Group

Text Structure Model #1- Definitions, Identifications, AKAs, and Examples
Text Structure Model #2- Simple Listings
Text Structure Model #3- Ordered Listings (Sequences)
Text Structure Model #4- Comparison/Contrast
Text Structure Model #5- Problem & Solution
Text Structure Model #6- Cause & Effect
Appendix M-1: Model #1- Definitions, Identifications, AKAs, and Examples

Text Structure Model #1

Definitions, Identifications, AKA, Examples

(don't forget to underline other real important info)

1. **Conservation** (kán-sar-vá-shún) is the wise use of natural resources. There are many things people can do to conserve soil. The most important is to leave plants growing where they are whenever possible.

2. An **electromagnet** is a temporary magnet made when electric current flows through a wire coil. The picture on this page shows one way to make an electromagnet. If you pass electricity through a coiled wire, the wire becomes magnetic. When the electric current stops flowing, the wire loses its magnetism.

3. **Stratus clouds** are low clouds that form flat, wide layers. Sometimes they cover the whole sky like a blanket and block sunlight. Sometimes they are a dull gray. Rain or snow may fall from these clouds.

4. Some Seminoles refused to move to the Indian Territory. They decided to unite and fight for their right to live in Florida. Osceola was one of them. Young Seminole, became their leader. Osceola was not a chief, but the Seminoles looked to him as a leader. He had been born in Georgia, among the Creeks. He became a Seminole leader because he had a bright mind and people listened to him.

5. Steel-framed buildings soon towered above many cities. Yet Chicago is still called "the home of the skyscraper." This city is now the home of our country’s tallest skyscraper—the Sears Tower. It is 110 stories high!

6. The way of life for Navajo as well as the Hopi and other Native Americans of the Southwest region includes a mix of the traditional and modern. Cities like Phoenix, Arizona, for example, use both modern irrigation canals and those built hundreds of years ago.
Appendix M-2: Model #2 - Simple Listings

Text Structure Model #2

Listings (the order doesn’t matter)

1. Simple listing - in a sentence, one thing after the other is listed and separated by commas

Main idea: Florida has five natural regions. The regions are called the Coastal Lowlands, Western Highlands, Marianna Lowlands, Tallahassee Hills, and Central Highlands.

These regions are called natural regions because they were created by nature.

How you can draw and label them:

Test question:

Answer:
Appendix M-3: Model #3- Ordered Listings (Sequences)

Text Structure Model #3

Ordered listing aka Sequence

(don’t forget other important info)

1. People have been changing the American land for thousands of years. Native Americans cleared spaces in forests to build villages and farms. Later settlers built canals, dams, mines, and factories.

2. The rocks in the picture have been changed by water and ice over thousands of years. Water fills tiny cracks in the rocks and freezes when the weather gets cold. The freezing water pushes against the rocks. Then the weather gets warm and melts the ice. The rocks move back, but the cracks may be larger than they were before. The freezing and melting over and over again breaks the rocks apart.

3. Steel is made from iron, but steel is stronger and lasts longer. How is steel produced? In one method, iron is placed in a container called a furnace. The furnace is heated to a very high temperature. When the iron gets hot enough—above 3000°F—it melts. Next, a gas called oxygen is forced through the liquid iron. This gas raises the temperature even further. As the boiling metal and gas mix, a change takes place. The iron turns into liquid steel, which hardens into blocks as it cools. From the blocks, steel products are made.
Appendix M-4: Model #4- Comparison/Contrast

Mangrove trees grow along the southwestern shoreline of the Everglades and in other parts of southern Florida. There are several kinds of mangrove trees. Two of the best known can be identified by their roots. Red mangroves develop roots that grow down from the larger branches. Black mangroves have hundreds of roots that resemble pencils.

In the late 1700s, people began building small factories and mills that used the power of running water to run machines. These mills made cloth from cotton. Machines allowed one person to make as much cloth in one day as many people working by hand.

Today few factories use rivers for power. They use electricity from many other sources.

Some natural resources can be replaced fairly easily. For example, an area that once had trees can be replanted with trees that grow quickly. A resource that can be replaced is called a renewable resource.

Many natural resources, such as metallic ores, can't be replaced. A natural resource that can't be replaced is called a nonrenewable resource. Nonrenewable resources should be conserved, or people someday will have to do without them.
Appendix M-5: Model #5 - Problem & Solution

Text Structure Model #5

Problem & Solution

1. Hundreds of years ago manatees were hunted in Florida for meat, oil, and leather. In 1893 our state passed a law to protect manatees.

2. Do you live in or near a large city? In many cities, air pollution is a serious problem. As you read in Chapter 1, cars that run on gasoline pollute the air. Many cars crowded together can make the air unhealthy. Using electric cars may be one way to solve this problem. These cars run on batteries, which results in less pollution.

3. The Everglades was not always thought of as one of Florida’s special places. For many years, water was channeled from the Everglades through hundreds of miles of canals. That did a lot of damage to the Everglades. Many kinds of plants and animals were no longer able to live in the Everglades.

4. Fast-moving motorboats often crash into manatees and hurt or kill these “gentle giants,” as manatees are often called. To lessen such accidents, in 1989 the Florida Department of Natural Resources ordered 13 Florida counties to enforce strict boating speed limits.

5. During the past 80 years, many of the Florida Keys have been seriously damaged. Shipwrecks have done some of the damage. People collecting coral have also harmed some of the Keys. In 1990 the United States Congress created the 3,500-square-mile (9,065-square kilometer) Florida Keys National Marine Sanctuary. Its purpose is to protect all of Florida’s remaining coral reefs.

6. In England, many Puritans had been jailed because of their religious beliefs. In 1629, a group of wealthy Puritans in England formed the Massachusetts Bay Company. King Charles I of England gave the company a charter to settle in North America. The charter was like a permit allowing the Puritans to settle areas claimed by England.
Appendix M-6: Model #6- Cause & Effect

Text Structure Model #6

Cause & Effect
(number in order and use arrows)

and other important info

Manufacturers in Japan and Europe learned cheaper, faster ways to make steel. They built modern factories that used new technology. As a result, they could sell their products at lower prices than manufacturers in the United States. By the 1970s many factories that used steel were importing it from other countries. Imported steel hurt the American steel industry.

Mosses don’t have special structures for carrying water. Because mosses lack such structures, water must move from cell to cell throughout the plant. This explains why mosses are small plants that are found growing only in moist places.

In 1832 the United States government made another treaty with the Seminoles. As a result of that treaty, about 3,000 Seminoles were forced to move to Oklahoma. Their journey was very difficult. Most Seminoles did not have enough food or blankets for the trip. Many died of starvation or illness along the way.

In 1855 the United States government sent surveyors who examined and measured land, to the Big Cypress Swamp. These surveyors entered the swamp near the village of Chief Holater Micco (hah-ler uht ur mee koh). The surveyors took some of the crops in the village farmland and destroyed the rest. The following morning the Seminoles attacked the surveyors’ camp. This fighting was the beginning of the Third Seminole War.
Appendix N: VK Students’ Practice Sheets For Skill Attainment

Idioms

Metaphors

Synonyms

Prefixes and Roots

Analogies

Context Clues
Tell what each idiom means.

1. have cold feet  
   to be afraid

2. get to the bottom of  
   find out about

3. call the shots  
   be the boss

4. behind the eight ball  
   in trouble

5. hand-me-downs  
   used things

6. elbow room  
   enough space

7. feast your eyes on  
   enjoy looking at

8. crocodile tears  
   fake crying

9. stir up a hornet's nest  
   make a lot of trouble

10. level-headed  
    uses good sense

11. shoot off his mouth  
    talk too much

12. as the crow flies  
    in a straight line

---

Blind date
Appendix N-2: Metaphors

23. The cloud was a hamburger in the sky.

24. The running deer was a speeding bullet through the woods.

25. The houses were dead all in a row.

26. The truck was a ox coming closer.

27. The thief was an eel slipping through the window.

28. The children were a packet of sunshine at the party.

29. Her feet were cookies with toes.

30. The over-cooked hot dogs were ink worms.

Make up 2 sentences using metaphors.

1. My sister was a dinosaur.

2. My dad is a strong ox.
Appendix N-3: Synonyms

Ladies

Bill Amend

I'm just determining how hard I studied until next week.

Say, I thought I was doing better on the first math test of the semester. Would you be really mad?

FOXTROT

Can I ask you a hypothetical question?

Sure.

CATHY

He's so arrogant!

He's so egotistical!

He's so conniving!

He's so conniving!

Jeez! Spent a giant fortune on a giant portable plasma TV just to say the only word it knows is "us!"
Appendix N-4: Prefixes

Find the Prefixes!

Underline the word(s) in each paragraph that have a prefix. Write what you think the word(s) mean on the line below each paragraph.

1. As you can see in this classification table, there are many groups of nonseed plants. One of these groups is made up of plants that have roots, stems, and leaves. Plants in this group do not have flowers. Ferns make up this group.

   - **no seeds**

2. Wind power may be one of the answers to today’s energy needs. Unlike many other sources of energy, wind can’t be used up and it doesn’t pollute the air. Also, wind turbines can be built fairly quickly.

   - **not like**

3. In the center of each village was the village common. A common is a grassy area that is shared by everyone in the community. Near the common was the meeting house, which also served as the church. The Puritans also built schools. Free education was unheard of in Europe at the time, but Puritan schools were free.

   - **not heard**

4. Animals of all species need to have young. Without having young, all of a species would soon die and disappear.

   - **not appear**

5. A third group of lower plants consists of algae. Algae are the simplest of all food-producing plants. Algae can be grouped by color. One type of algae is made up of blue-green algae. Blue-green algae can only be seen under a microscope. They grow in both fresh water and in salt water.

   - **little scope**

   - Animals also need water. They lose water by sweating, panting, or other means. That water must be replaced. Most animals replace the lost water by drinking from ponds, lakes, streams, and puddles.

   - **placed again**
Appendix N-4: (Continued)

1. Lindsey needs to trim her bushes every two weeks.
2. Michael saw a movie about a person who was not truthful.
3. Brendan drew a five-sided figure in math class.
4. Morgan knows we live in the northern half of the world.
5. Riley had to draw the picture again.
6. Elais wanted to program ahead of time his VCR.
7. Ashley moved her brush away from where it should be.
8. Patrick knew that his height and the sixth grade boy's height were not the same.
9. Jennifer decided to eat yogurt with no fat.
10. Christy rides a bicycle now, but when she was little she rode a three-wheeler.
11. Courtney had to get ready for her spelling test.
12. Tegwyth saw a car make a turn in traffic that was against the law.

a b c
dishonest nonfat displaced illegal unequal pentagon
redraw prepare biweekly hemisphere preset tricycle
Appendix N-5: Analogies

Categories of Analogies

1. **Antonyms**
   - smile: happy
   - frown: sad

2. **Opposites in sensation**
   - olive: icing
   - salty: __________

3. **Synonyms**
   - smell: sniff
   - see: __________

4. **Characteristics**
   - rain: wet
   - sun: __________

5. **Location**
   - doctor: hospital
   - teacher: ________
Appendix N-6: Context Clues

*Context Clues!*

In each paragraph underline the words, phrases, or sentences that help you figure out what word below should be written in the blank. Then write the correct word in the blank.

1. sudden, major change. In the Industrial Revolution, new power-driven machines replaced hand tools. As a result, goods could be made faster and in greater numbers.

2. Unlike the Cherokee or the Iroquois, whom you have read about, the Lakota did not build villages. Instead they moved from place to place in search of game animals.

3. Manufacturers in Japan and Europe learned cheaper, faster ways to make steel. They built modern factories that used new As a result, they could sell their products at lower prices than manufacturers in the United States.

4. You can see how much we depend on fuels. But they are resources. Someday they will be gone.

5. Amphibians have some in common with fish. Like fish, they are cold-blooded. They lay eggs in water, where the eggs hatch. Like fish, young amphibians live in water and breathe with gills.

6. Crude oil is a mixture of many substances called The name comes from the elements hydrogen and carbon, which make up hydrocarbons.

non-renewable traits permanent hydrocarbons revolution technology
Appendix O: Informal Observation Form- Categories and Comments by Observer #1

**INFORMAL OBSERVATION FORM**
Adapted by Diane Reese, Ph. D., and Paula Zielonka, Ph. D.

**Teacher’s Name:** Jan Gentry  
**Observer’s Name:** Diane J. Reese, Ph. D.

**Date:** July 20, 2004  
**Time:** 11:00–2:00  
**Type of Classroom:** Media Center

**Number of Students:** 15/11  
**Grouping Pattern:** Whole Class Seated Around Tables  
**Type of Instruction:** Mainly the guided practice aspect of direct instruction

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>COMMENTS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orients students to lesson content</td>
<td>Ms. Gentry oriented the students to the lesson through review and explanation.</td>
<td>Ms. Gentry reviewed work from the previous class meeting and oriented the students to the current lesson on simple listing.</td>
</tr>
<tr>
<td>Provides clear directions</td>
<td>Ms. Gentry presented directions verbally while displaying the worksheet on the overhead. She answered any questions students had about the directions.</td>
<td>Ms. Gentry presented directions verbally while displaying the worksheet on the overhead. She answered any questions students had about the directions.</td>
</tr>
<tr>
<td>Emphasizes important points</td>
<td>Ms. Gentry explained and emphasized the meanings of the prefixes as well as the hints that could be used by applying them to word meanings.</td>
<td>Ms. Gentry explained and demonstrated simple listing and how it is determined in reading passages from various subjects.</td>
</tr>
<tr>
<td>Engages students in interaction and discussion</td>
<td>When Ms. Gentry led class discussion, she knew the students’ names and engaged them in the class interaction.</td>
<td>Ms. Gentry emphasized key points in recognizing simple listing and in charting the listing pattern. She used guided practice by including students in using clues and charting the simple listing pattern.</td>
</tr>
<tr>
<td>Asks factual and analysis questions</td>
<td>Ms. Gentry employed mostly literal questions with some at the interpretive level.</td>
<td>Ms. Gentry asked both factual and analysis questions.</td>
</tr>
<tr>
<td>Provides appropriate feedback</td>
<td>Ms. Gentry provided responses to student participation and included specific praise in her feedback throughout the lesson.</td>
<td>Ms. Gentry provided feedback for responses during class discussion and while students were marking their passages.</td>
</tr>
<tr>
<td>Recognizes responses, amplifies, gives specific academic praise</td>
<td>Ms. Gentry clarified students’ responses during class discussion and interaction. She provided appropriate praise.</td>
<td>Ms. Gentry listened to and clarified students’ responses. She provided some use of specific praise.</td>
</tr>
<tr>
<td>Challenges students</td>
<td>Ms. Gentry identified the more challenging items during the lesson.</td>
<td>Ms. Gentry identified the more challenging items during the lesson.</td>
</tr>
<tr>
<td>Promotes active learning</td>
<td>Ms. Gentry related the words used in the lesson to students’ interests and included students’ names in some of the practice sentences.</td>
<td>Ms. Gentry provided opportunities for students to use highlighting, numbering, and mapping as they marked the simple listing passages to demonstrate an understanding of the simple listing pattern.</td>
</tr>
<tr>
<td>Provides practice</td>
<td>Ms. Gentry provided practice using prefixes and context clues for determining word meanings.</td>
<td>Ms. Gentry provided guided practice in recognizing and mapping the simple listing passages.</td>
</tr>
</tbody>
</table>
Appendix O: (Continued)

<table>
<thead>
<tr>
<th>Circulates and assists students</th>
<th>Ms. Gentry circulated regularly as she taught and led the guided practice.</th>
<th>Ms. Gentry used the overhead and also circulated to help students as they mapped and highlighted the passages.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expresses enthusiasm verbally and nonverbally</td>
<td>Ms. Gentry was verbally enthusiastic and had a positive demeanor.</td>
<td>Ms. Gentry was verbally enthusiastic and had a positive demeanor.</td>
</tr>
<tr>
<td>Manages classroom behavior appropriately</td>
<td>Ms. Gentry monitored students' attention and redirected off task behavior. If necessary, she quietly moved off-task students to other tables so that they could improve their focus on the task.</td>
<td>Ms. Gentry monitored students' attention and redirected off task behavior. If necessary, she quietly moved off-task students to other tables so that they could improve their focus on the task.</td>
</tr>
<tr>
<td>Maintains instructional momentum</td>
<td>Ms. Gentry kept the instructional momentum flowing.</td>
<td>When the overhead bulb burned out, Ms. Gentry needed to take time to gather her materials so that she could continue without using the overhead. She reviewed what they had been doing and moved on with the lesson.</td>
</tr>
</tbody>
</table>
| Suggestions | • Could have included longer and more frequent wait-times for student responses  
• Needed to have a larger font size on the transparency and to have the width of the information on the transparency show completely on the screen  
• Could have included more planned examples for prefix instruction could have been included. | • Needed to have extra copies for those who left their copies at home when working on the assignment they went over at the beginning of class  
• Needed to include more students in the verbal participation  
• Needed to include more wait time for responses  
• Needed to have handouts arranged for quick and easy distribution  
• Needed to have backup AV-Media equipment and supplies. |

Adapted from the Summative Observation Instrument, *Florida Performance Measurement System*

CONCLUSIONS FROM DR. REESE AND DR. ZIELONKA:

1. Both lessons were mainly lecture using overheads and guided practice.
2. Both lessons utilized worksheets.
3. The seating was similar for both lessons.
4. In general, both groups were mainly treated similarly.
### Appendix P: Informal Observation Form- Categories and Comments by Observer #2

**INFORMAL OBSERVATION FORM**
Adapted by Diane Reese, Ph. D., and Paula Zielonka, Ph. D.

<table>
<thead>
<tr>
<th>Teacher’s Name:</th>
<th>Jan Gentry</th>
<th>Observer’s Name:</th>
<th>Paula S. Zielonka, Ph. D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>July 20, 2004</td>
<td>Time:</td>
<td>11:00-2:00</td>
</tr>
<tr>
<td>Number of Students:</td>
<td>15/11</td>
<td>Type of Classroom:</td>
<td>Media Center</td>
</tr>
<tr>
<td>Type of Instruction:</td>
<td>Mainly the guided practice aspect of direct instruction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>COMMENTS 11:00 A.M.</th>
<th>COMMENTS 1:00 P.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oriented students to lesson content</td>
<td>During the lesson, Gentry did connect what was being taught to previous lessons.</td>
<td>Gentry related what students were learning to previous activities.</td>
</tr>
<tr>
<td>Provides clear directions</td>
<td>She gave directions for the worksheet. Comprehension of directions was only checked by asking if there were questions. She could have one or more students reiterate directions.</td>
<td>She gave directions for worksheets. Comprehension of directions was only checked by asking if there were questions. She could have asked one or more students to reiterate directions.</td>
</tr>
<tr>
<td>Emphasizes important points</td>
<td>She explained to students how concepts being taught, such as prefixes, could be useful.</td>
<td>She explained how concepts being taught, such as simple listing and clues to locating definitions in context, would be useful in their subjects.</td>
</tr>
<tr>
<td>Engages students in interaction and discussion</td>
<td>She used students’ names in sample definitions to engage students’ attention.</td>
<td>She involved students in finding clues for definitions and identifications in context, in recognizing topics and simple listings, and in diagramming simple listing patterns.</td>
</tr>
<tr>
<td>Asks factual and analysis questions</td>
<td>She asked mainly factual questions.</td>
<td>She asked mainly factual questions, but did include some higher-level questions.</td>
</tr>
<tr>
<td>Provides appropriate feedback</td>
<td>She provided corrective feedback on a few occasions by giving a word opposite in meaning to the one in the item or by giving clues to the word’s meaning.</td>
<td>She provided corrective feedback on a limited basis.</td>
</tr>
<tr>
<td>Recognizes responses, amplifies, gives specific academic praise</td>
<td>Gentry mainly recognized responses, although she occasionally amplified responses or provided specific academic praise.</td>
<td>Gentry mainly recognized responses with no use of amplification and a little use of specific academic praise.</td>
</tr>
<tr>
<td>Challenges students</td>
<td></td>
<td>Several times, she indicated that an item was a tricky one—that a definition was not where expected.</td>
</tr>
<tr>
<td>Promotes active learning</td>
<td>She used students’ names in worksheet items.</td>
<td>She had students use charts for simple listing. Students worked in groups, marking passages, underlining main ideas, and numbering items in a list.</td>
</tr>
<tr>
<td>Provides practice</td>
<td>Most of the activities observed practiced the use of context to determine meaning.</td>
<td>The lesson was primarily guided practice.</td>
</tr>
</tbody>
</table>


### Evaluation of Jan Gentry

<table>
<thead>
<tr>
<th>Circulates and assists students</th>
<th>Gentry frequently circulated among the students.</th>
<th>Gentry stationed herself at the overhead when explaining strategies, but circulated as students completed worksheets.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expresses enthusiasm verbally and nonverbally</td>
<td>She verbally expressed enthusiasm, using good intonation in her voice. However, she rarely smiled or showed emotion non-verbally.</td>
<td>Her voice has good intonation and listening to her is interesting. However, she rarely smiled or showed emotion non-verbally.</td>
</tr>
<tr>
<td>Manages classroom behavior appropriately</td>
<td>She monitored behavior, used withitness, quietly moved disruptive students, had signals for attention (all eyes up front), waited for students’ compliance, made sure students were on the appropriate page, and had activities for students to do when worksheets were completed.</td>
<td>Gentry had signals for attention, such as eyes on the screen, and she waited for attention. She also used withitness by moving a potentially disruptive student and by recognizing that the overhead light was bothering some students.</td>
</tr>
<tr>
<td>Maintains instructional momentum</td>
<td>She kept the momentum going throughout the lesson.</td>
<td>Her momentum was disrupted when an overhead light burned out and when searching for materials.</td>
</tr>
</tbody>
</table>
| **Suggestions** | - The answers are visible and should probably be covered while students are devising their responses.  
- Make sure that you have examples in mind for the prefixes.  
- A questioning sequence of asking the question, waiting 3 to 5 seconds, calling on a student, then providing feedback to the response is considered to be more effective. | - The answers are visible and should probably be covered while students are devising their responses.  
- Have materials organized so that they are in an order that makes the ones you need more easily accessible.  
- Make sure that you evenly distribute turns versus calling on the same student several times.  
- A questioning sequence of asking the question, waiting 3 to 5 seconds, calling on a student, then providing feedback to the response is considered to be more effective. |

Adapted from the Summative Observation Instrument, *Florida Performance Measurement System*

### CONCLUSIONS FROM DR. REESE AND DR. ZIELONKA:

1. Both lessons were mainly lecture using overheads and guided practice.
2. Both lessons utilized worksheets.
3. The seating was similar for both lessons.
4. In general, both groups were mainly treated similarly.
About the Author

Jan Gentry received a Bachelor’s Degree in Early Childhood and Elementary Education in 1972, a M.A. in Elementary Education with Reading and Language Arts Emphasis in 1994, and a Reading Specialist Degree in 1994 from the University of South Florida. Since 1972 she has been a reading and math tutor, with special interest in teaching students the reading strategies of using text structure with annotation to improve reading comprehension.

Ms. Gentry was certified as a Reading Teacher Supervisor and Intern Supervisor, and Coordinator and Observer for Teacher Certification for the State of Florida. She is a member of Kappa Delta Pi Honorary Society in Education, Phi Kappa Phi Honorary Society, and the International Reading Association. She has taught the elementary grades, remedial reading courses at St. Petersburg College, and a reading course for teacher interns at the University of South Florida. She has presented seminars on studying and journal writing.