A Syllabus of Enrichment Activities to Enhance Content Area Reading in Science

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A SYLLABUS OF ENRICHMENT ACTIVITIES
TO ENHANCE CONTENT AREA READING IN SCIENCE

A Project Report
Presented to
The Graduate Faculty
Central Washington University

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

by
Lynn Carol Swanson
May 1982
A SYLLABUS OF ENRICHMENT ACTIVITIES

TO ENHANCE CONTENT AREA READING IN SCIENCE

by

Lynn Carol Swanson

May, 1982

A syllabus of 65 enrichment activities was developed to accompany the third grade Addison Wesley science text. The activities were designed to aid children in transferring study skills, context clues, comprehension and vocabulary from reading instruction to content material. Objectives and teaching strategies were developed to accompany each of 26 skills. Suggested vocabulary activities and materials were included. Each of the activities focused on helping students to transfer necessary study skills, context clues, and comprehension skills to the science text in order to improve their proficiency to read and use the text effectively.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION.</td>
<td>1</td>
</tr>
<tr>
<td>Need for the Study.</td>
<td>3</td>
</tr>
<tr>
<td>Purpose of the Study.</td>
<td>4</td>
</tr>
<tr>
<td>Statement of the Problem.</td>
<td>4</td>
</tr>
<tr>
<td>Limitations of the Study.</td>
<td>5</td>
</tr>
<tr>
<td>Definitions of Terms.</td>
<td>5</td>
</tr>
<tr>
<td>Summary of the Following Chapters</td>
<td>6</td>
</tr>
<tr>
<td>II. REVIEW OF THE LITERATURE</td>
<td></td>
</tr>
<tr>
<td>Introduction.</td>
<td>8</td>
</tr>
<tr>
<td>The Need for Content Area Reading Instruction.</td>
<td>8</td>
</tr>
<tr>
<td>Specific Content Area Reading Skills.</td>
<td>12</td>
</tr>
<tr>
<td>Teaching Content Area Reading Skills in the Science Classroom</td>
<td>14</td>
</tr>
<tr>
<td>Instructional Strategies for Utilizing the Content Area Textbook</td>
<td>16</td>
</tr>
<tr>
<td>III. PROCEDURES OF THE STUDY</td>
<td>23</td>
</tr>
<tr>
<td>IV. THE PROJECT</td>
<td></td>
</tr>
<tr>
<td>Lesson Plans Included in the Syllabus of Enrichment Activities to Enhance Content Area Reading in Science</td>
<td>27</td>
</tr>
<tr>
<td>Table of Contents for Sample Activities</td>
<td>28</td>
</tr>
<tr>
<td>Sample Activities</td>
<td>30</td>
</tr>
<tr>
<td>V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS</td>
<td>81</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>84</td>
</tr>
</tbody>
</table>
Chapter One

Introduction

Reading is a necessary part of every child's education. Children are required to use reading skills during reading instruction as well as to gain information in science, social studies, and math. "Because reading has no subject matter of its own, whatever the reader reads is reading" (Marksheffel, 1969, p.129). Despite the truth of this statement, reading instruction in most classrooms has been confined to one period of the day. While early reading instruction is basically skills oriented, students in the intermediate grades are required to apply reading skills in content areas.

According to Palmer (1975) competence in reading does not guarantee the skills necessary for content area work. Each subject area requires its own unique set of skills. Educators who expect students to adequately apply necessary reading skills to a particular subject area without instruction are soon disappointed. Investigators in the field have been advocating reading instruction in every subject area. The move toward reading instruction in the content areas began in the secondary schools and has more recently been directed to the elementary level through the research of Robinson (1969, 1975, 1978), Durkin (1978), Herber (1972), and others.
Students today are involved in an increasing number of areas of study. In expanding their horizons, students are expected to utilize an ever-increasing number of textbooks. Teachers neglect a vital part of the educational process if they do not provide for the needs of all students in every subject area, according to Kratzner and Mannies (1979). Faced with a number of subjects, each with its own textbook, technical vocabulary and style, students are easily overwhelmed. There is much a teacher can do to aid the student's understanding and use of the textbook as a learning tool. Each book may contain not only a table of contents, a glossary, and an index, but charts, maps, tables, graphs, illustrations, and technical language. A student is not prepared to deal with these components through instruction from a basal series. Teachers who realize this see the need for instruction in the use of these materials.

Though study skills are not thought of as basic as are vocabulary and word attack skills, they become important as students progress to intermediate grades. As Heilman stated (1964) some skills such as table of contents are taught on a continuum. They are retaught and reviewed at various grade levels. "Despite the developmental nature of these skills [study skills] and numerous opportunities for review many junior high and high school students lack proficiency in applying the reading-study skills" (Heilman, 1964, p.421). As students enter the intermediate grades, they are required to
read more textbooks but teachers are also pressured to cover more material. In order to cover the material, skills are neglected.

It might be profitable if each of us, as teachers, consider whether we have given the reading-study skills a proper emphasis in our teaching of the total reading program. We should not expect, or hope, that children become expert in applying these skills simply because they are exposed to books which contain an index, table of contents, charts, graphs, or because they have access to encyclopedias and reference books; or because there is a library down the hall which contains author and subject card catalogues, the readers' guide to periodical literature and an unabridged dictionary. Let us re-examine Dr. Ernest Horn's dictum that if a skill is worth having, it is worth teaching (Heilman, 1964, p.424).

Through the statements of authorities it is evident that study skills are a necessary part of the total reading program and deserve consideration by the teacher.

**Need for the Study**

Students often find they are unable to use the science text effectively because they lack the needed skills to read and understand the material in the textbook. There is a need to teach students how to use the textbook as a tool. This means enrichment activities in study skills, comprehension, context clues, and vocabulary must be developed since the basal reading instruction does not always result in the transfer of skills to the content areas.

The possession of a tool does not insure its skillful use. The teacher, guiding the learning of a child in the early school years, works to aid the child to develop the most important tools of learning, reading skills, which he must later learn to apply when mastering science, mathematics, the social sciences,
and literature. It is almost universally true that no individual will learn to use these tools, even though established at an early age, with real skill and sensitivity, without the help of subject matter teachers (Triggs, 1954, p.v.).

The development of enrichment activities to accompany the science text is needed to aid the students in effective use of the text.

Purpose of the Study

The purpose of the project was to provide the enrichment materials to aid the children in transferring such skills as use of context clues, comprehension, vocabulary, and location of information to the Addison Wesley science textbook in order to increase the ability of the students to read the science text. Vocabulary lists and activities were developed to accompany each chapter. The project was intended to improve the reading of the science text by increasing the students' ability to use the book as an informational source.

Statement of the Problem

This project was developed to provide 65 enrichment activities to help teachers aid children in the reading and understanding of the science textbook. Particular lessons were developed to teach children to use the table of contents, index, and glossary. Other lessons provide instruction in study skills, context clues, comprehension, and vocabulary.
Limitations of the Study

The following are the limitations of the study.

1) The lessons were developed to reinforce only those comprehension, context clue, vocabulary, and study skills necessary for the science text.

2) The project was limited to the Addison Wesley Science Text, Level Three.

3) The project was developed for the third grade classroom.

4) The lesson areas covered were: table of contents, glossary, index, vocabulary, comprehension, context clues, and study skills.

Definition of Terms

The following definitions were used for the purpose of this study. The source of definitions for the study was A Dictionary of Reading and Related Terms, 1981.

Content Reading (content area reading)
Reading in subject matter areas as history, science, mathematics, etc., usually for study purposes.

Context
The sounds, words, or phrases that surround a spoken or written language unit, often influencing its meaning and effect; linguistic environment.

Intermediate Grades
The upper elementary grades, 4, 5, and 6.

Reading Comprehension
1. Understanding what is read.
2. One or more of several levels of a presumed hierarchy
of reading comprehension processes:

a. **Literal Comprehension**
   Understanding the sense meaning of what is heard or read, presumably without making inferences.

b. **Interpretation**
   The process of inferring beyond the literal meaning of a communication: Inferred meaning: "reading between the lines."

c. **Creative Reading** (applied reading)
   The process of gaining new insights in reading by identifying salient ideas, recombining them in novel ways, and relating them imaginatively to experience.

**Study Skills**
A general term for those techniques and strategies which help a person read or listen for specific purposes with the intent to remember.

**Transfer** (of learning)
The doctrine that training or learning can be carried over into stimulus situations that the learner recognizes as similar to one(s) previously learned.

**Summary of the Following Chapters**
Chapter two presents a review of the literature related to the project. Chapter three describes procedures used in developing the project. Chapter four includes a sample of the lesson plans that reinforce comprehension, context clues,
vocabulary, and study skills. Chapter five is a summary of the project and contains conclusions drawn by the writer as a result of the project.
Chapter Two

REVIEW OF LITERATURE

Introduction

This chapter presents a review of literature related to the following four areas: the need to instruct students in content area reading skills; a summary of specific content area reading skills; content area reading as it applies to science; and instructional strategies in the teaching of science.

Rupley (1975) stated:

Reading instruction must be viewed as a total process, and the teaching of a reading skill must provide opportunities for application of the skill. If this viewpoint is accepted by teachers, then teaching reading in the content areas is not reading to learn, but an extension of reading instruction (p.802).

If Rupley's statement is accepted there is a need for reading instruction in content areas. Numerous investigators substantiate this through examples and teaching strategies found in the literature.

The Need for Content Area Reading Instruction

Content area reading has been examined in depth by educational investigators. According to Wright and Anderson (1980) reading instruction outside the content area has not been successful because skills may not be applied to content
areas.

Lehr (1980) stated:

Increasingly elementary school teachers are discovering that while reading classes are important, the specific skills they stress may not be transferable to other subject areas (p. 888).

Lehr (1980) stressed the importance of using a variety of materials to teach reading in order to accomplish a transfer of skills. As stated by the members of the Fifteenth Annual Conference and Course on Reading (1959), students cannot use reading as a means of securing knowledge in a particular area until they are taught to read. Unfortunately, students have been expected to master subject matter which they cannot read.

Beginning in 1970 there was a concern over what appeared to be a nationwide decline in literacy as seen at the secondary level. Lamberg and Lamb (1980) cited research by Carrol in which 10 to 15 percent of students in grades seven through nine scored three years below grade level. Also cited was research by Goodladd which stated that approximately one-third of secondary students could be expected to read below grade level.

Assessment tests, administered at the national, state, and local levels, support the need for teaching reading skills within each content area course because students are lacking in these reading skills. Lamberg and Lamb (1980) said,

Results of national assessments and other assessments conducted by states, school districts, and colleges
and universities strongly indicated that many students are not making desirable overall progress in reading and that many more have not achieved mastery in skills believed important to reading and study in content area courses (p.802).

In support of this research, Palmer (1975) said that competence in reading does not guarantee the skills needed for content area work. A misconception for teachers has been the belief that only reading teachers can teach reading and that reading was only to be taught during the period of the day designated as "reading." Palmer stated that reading success comes from concentrating on the ideas presented, not on oral reading. What was taught was most effective in the content area in which it was used. Palmer (1975) found that content area teachers believed themselves to be deficient as reading teachers. They did not feel secure in guiding their students' reading of the text. Palmer added that some teachers believe that reading must begin with phonics. Palmer stressed the importance of guiding students to analyze material for meaning. While the teaching of reading may be done in parts, the parts must somehow come together. He stated that reading should be taught as a process, with the acquisition of meaning at the center of instruction. The proficient reader learns to predict as he reads. Since students draw from language abilities in reading, prediction and meaning should work together. Michaels (1965) also stated that research suggests that language difficulty is the main reason for students' failure in the content areas.
Durkin (1976) investigated reading comprehension instruction. The study involved grades 3 through 6. She observed that almost no comprehension instruction took place in the classrooms. The older students were given more written assignments rather than activities to increase their reading abilities. In the process of the study, literature on comprehension instruction was studied. Only one two-part study, Quirk, Trismen, Weinberg, and Nalin (1973 and 1976), was found. The study indicated that reading instruction time was spent in the following manner:

- Management Instruction: 30%
- Pronunciation and Word Recognition Activities: 26%
- Comprehension Activities: 12%
- Spelling: 9%
- Non-reading Instruction: 4%

(p.484). No time was spent on content area reading skills instruction. Durkin (1976) summarized the results of her study as follows:

1. Practically no comprehension study was seen;
2. Teachers were interrogators and assignment givers;
3. No social studies or other content area time was spent to improve comprehension ability (p.520).

According to research conducted by Bullerman and Franklin (1975) teachers must be informed that remedial and developmental reading have been taught in isolation. In their study, they found no systematic instruction given in study skills for subject matter. For the study, subject matter teachers
worked with students to reach literal, interpretive and applied levels of understanding of the printed material. The teachers found that they didn't know how to get students to reach all levels. They agreed that helping students acquire vocabulary and specific study skills was their job—not the job of the reading teacher (p.23).

Robinson (1975) stated:

If the strategy of learning is used in a different environment and if there has not been a great deal of practice in positive reinforcement, it is unlikely that it will be successfully used in a new situation (p.5).

He added that an instructor, no matter what his subject field, has the responsibility of ascertaining where a student is in relation to what is to be learned next. Once this has been determined, the instructor's obligation is to help each student become prepared for the learning. "Failing in this kind of assistance, the prospective learner does not learn. One simply does not learn when one is not ready to learn" (p.40).

**Specific Content Area Reading Skills**

Investigators have made numerous statements concerning the content area reading program. A Report of the Fifteenth Annual Conference and Course on Reading edited by Cleland and Bacon (1959) listed the following components necessary to the reading program:

1. Word analysis skills—word study through the use of word attack, context, structural analysis and configuration;
2. Concept development--instructıon leading to the understanding of narrative and expository material which should be accomplished through various media and materials;

3. Development of comprehensıon in the ongoing reading program so that children come to content reading with some skills which need further development (p.39).

Continued research produced information about the skills necessary for reading in the content areas. Burron and Clay-baugh (1974) examined some common problems.

1. Background--prior knowledge and experience is needed for understanding;

2. Specific vocabulary not in the speaking and writing vocabulary of the students is often present;

3. The style of composition may include the use of questions, compactness of expression, use of figures of speech, and directions;

4. Graphic aids important to understanding the material must be dealt with;

5. Subject matter may not be of interest;

6. Typographical clues such as phonetic spelling, changes from upper to lower case, italics, boldface print, and indentations are included;

7. Inferential and critical reading skills are used more frequently than in narrative reading;

8. Reading study skills such as location, evaluation, organization, and retention are required (pp.18-19).

Durkin (1978) added that new concepts are presented in rapid succession.

Many studies were done to identify the skills which must be developed to overcome these problems. Heilman (1964) listed the following skills:

1. Locating information
2. Evaluating relevant data
3. Organizing data
4. Retention of pertinent material
5. Ability to comprehend and adjust rate of reading to the purpose and nature of the material.

Burron and Claybaugh (1974) were in agreement with this.

Robinson and Thomas (1969) included: 1) the ability to survey material and read for a purpose, and 2) the ability to combine information gained from a variety of sources.

Burns and Roe (1976) outlined content area reading skills as follows:

1. Adjusting reading rate to the reading material and purpose for reading;
2. Locating necessary reading materials through the use of table of contents, index, glossary, encyclopedias, reference books, and card catalogue;
3. Using organizational skills such as note-taking, outlining, and summarizing;
4. Interpreting reading aids including glossaries, footnotes, bibliographies, appendices, maps, graphs, tables, and illustrations;
5. Determining the meaning of unknown words and technical vocabulary;
6. Reading critically to determine the timeliness of the material;
7. Comprehending reading material including cause and effect relationships, sequence of events, main ideas, locating details, making inferences, drawing conclusions and following directions;
8. Employing flexible reading rate to meet the purpose of the reading (pp.301-339).

Teaching Content Area Reading Skills
In the Science Classroom
"No content area appears to be in more of 'a state of dynamic change' than science" (Robinson, 1975, p.99).

To be understood, science must be read effectively. Robinson explained while observation, discovery, inquiry, and involvement are employed in the classroom, students must also learn to read and understand a series of details which often add up to a scientific generalization. Science also involves reading and doing. He added that the task is complicated by the vocabulary of science that may also involve math terminology. Six patterns of writing in science were listed: enumeration, classification, generalization, problem solution, comparison, comparison or contrast, and sequence. Robinson concluded that without guidance, children have a very difficult time understanding science material.

It is variously estimated that fifty to eighty percent of the learning that takes place in science classes comes from reading, when we define reading as thinking about as well as decoding and processing information (Shepherd, 1980, p.9).

Gallan (1964) stated that though direct experiences are important in teaching science, textbooks and other materials have a necessary and important place in the total science program.

The various purposes which a text meets can be looked upon as reading skills and activities which need to be developed for accurate and critical reading to take place. Furthermore, by developing these reading skills in science there should also be reciprocal reinforcement in the general area of reading (p.445).

Gallan added that texts must be used effectively in a planned program at the level of the students using them.
Instructional Strategies for Utilizing the Content Area Textbook

In the literature about reading in the content areas, researchers have discussed instructional methods. According to Robinson (1975) one important strategy often neglected by teachers is the establishment of a purpose for reading prior to the reading. "Content area reading has often been purposeless in the minds of the students. The assignment 'read the next chapter' has been used too frequently" (p. 45). Robinson stated that learning can become more exciting if students are given assignments according to their ability. Robinson said that it was important for students to understand the organization of the book. When a new book is introduced, students should become familiar with it under teacher guidance. Robinson identified the following parts of a book as important for student knowledge: title, preliminary material (date of publication, preface), table of contents, introduction, typographical words (italics), graphics, summaries, and terminal aids (index, glossary, and appendix). Statements by Heilman (1964) supported this. According to Heilman's research, teachers can easily devise a one page exercise to instruct and review the essential factors for the use of each textbook.

Herber (1978) recommended that teachers guide students through textbooks referring to the specific graphic aids. These aids should be pointed out with reference to the information to be gained from them. Burns and Roe (1976) made
suggestions for accomplishing this as follows:

1. The students read the preface or introduction in order to determine the purpose for which the book was written.

2. Students should be taught to use the table of contents. This may be accomplished through use of a brief drill including questions such as:
   a. What topics are covered in this book?
   b. What is the first topic discussed?
   c. On what page does the discussion of ________ begin? (This question may be repeated several times using different topics.)

3. Similar exercises may be developed for the use of the index. Questions should be more specific including such details as page numbers, location of specific illustrations or graphs, main headings and subheadings.

4. Questions on word meaning should be developed for instruction in the use of the glossary (p. 303).

Lehr (1980) and Clary (1971) stressed the importance of using a variety of materials in content area reading. Clary concentrated on critical reading involving the following factors: 1) materials should be varied to include texts, reference books, magazines, pamphlets, and trade books; 2) areas of instruction should include a) study of word meaning and preciseness, b) propaganda devices, c) logic of arguments, d) objective vs. subjective material, e) recognition of purpose, bias, viewpoint, f) types of literature, g) evaluation criteria, h) language devices.

The research by Lehr (1980) cited instructional strategies by four investigators. These will be described below.
The Directed Inquiry Activity (DIA) was developed by Thomas. It focuses on who, what, where, how and why. Material is previewed to predict answers to each of these questions. Predictions are recorded and discussed to establish purpose and mind set. As the students read they confirm or change the predictions. One weakness that was noted for this strategy was the lack of preteaching of vocabulary.

Ribovich employed four instructional steps in his method.

1. Students specify content expectations and then read focusing on the expected and unexpected.

2. Students are directed in writing experiences in order to become familiar with the organization of the material and the author's style.

3. Discussion takes place and self monitoring activities are given to those with extreme difficulty in comprehension.

4. Concept development is stimulated.

Carney's method involved the analysis of content to determine specific reading behaviors necessary for learning the particular material, followed by the teaching of those behaviors. The following strategies were used:

1. Structured overview: Content material is used to present an overview of the hierarchy of ideas and relationships.

2. Embedded organizer: Models of desired responses are inserted into what has been read at significant points through the reading. Models are gradually removed.

Cassidy presented Project CARE (Content Area Reading Enrichment). This project insured that all children received
reading instruction in every content area through the eighth grade. It was designed in the Newark, Delaware School District and involved full credit inservice and summer sessions for teachers. Kits were developed for each content area and included skills appropriate to that area. No research was found concerning the results of this project.

Task cards were developed by Wright and Anderson (1980). The cards included skills for locating information and using textbooks, dictionaries, and reference books. Cards were designed to make the children become more independent in their use of content materials.

In the area of science, students must deal with vocabulary and concepts which are beyond their experience. Robinson and Thomas (1969) cited this statement by Shepherd:

"Science is regarded as a technical subject. There are many concepts to be learned and they must be expressed by using words which are pertinent. These words are often new to the student and have little relationship to his past experience (p.155)."

Investigators have made suggestions to help teachers aid students with this problem. Robinson and Thomas (1977) stressed the importance of pre-teaching "stopper" words, those words which are unfamiliar and will interrupt a student's reading. Lamberg and Lamb (1980) made these suggestions for dealing with vocabulary:

1. Match words that are similar (or different).

2. Match two or more words that are similar (or different).
   Example: Underline the words (that are similar to
or different from) the first word.

a. nation village state race continent
b. citizen native foreigner subject alien

3. Write synonyms or antonyms for given words.

4. Match the word which is closest in meaning.

5. Match the word which is opposite in meaning.

6. Select the most precise word for completing the sentence.
   Example:
   a. If the particle were almost microscopic, it
      would be small/little/minute.

   b. If the effect of its radioactivity were ephemeral,
      it would last a brief time/momentarily/a short
      time.

   c. If it disintegrated instantly, it would disappear
      soon/ in a while/ immediately.

7. Organizing vocabulary words into groups which have
   something in common (pp. 45-46).

Robinson and Thomas (1977) said

Many students do not rely on the language surrounding
unknown words as sources of definition and clarification. Teachers often observe a tendency to read
right on past unfamiliar words. Alerting students to
the intelligent use of context encourages them to hunt
for meaning instead of passing new words by without a
try (p.19).

Spache (1975) outlined a variety of context clues that should
be introduced to children. Among the clues listed were: 1) typographical; 2) definition; 3) summary; and 4) pictorial illustrations. Spache (1975) and Robinson (1978) suggested that emphasis should be placed on helping students employ the sense of a sentence or surrounding sentences to aid in the identification of the meaning of an unknown word.

Spache (1975) advised the development of cloze exercises
to help students gain the ability to employ context clues of each type. The cloze task as defined by Lamberg and Lamb (1980) presents the students with a sentence or passage from which a word has been deleted and asks the student to supply the missing word. After the students supply the missing word or words for the exercise they give support for the answers they chose. Formal names for the types of clues were not necessary.

Comprehension of factual material must also be considered. Herber (1974) divided comprehension skills into levels (p.69). These levels are literal, interpretive, and applied. Several assumptions must be made when instruction in levels of comprehension takes place:

1. The teacher has established an overall concept to be learned from the material;

2. The teacher has reviewed previous material with students to set context and purpose for the study of the material;

3. The teacher has covered the necessary vocabulary for the reading (p.38).

The students are given the reading material and a teacher-constructed worksheet of statements related to the reading. The worksheet includes statements for each level of comprehension. The students are instructed to mark all statements they believe relate to the reading. A discussion should follow during which students are asked to support or refute the statements. According to West (1974) several purposes for reading may be considered, such as selection of the main idea of paragraphs, sequence of events, or listing of cause
and effect.

Conclusion

According to authorities, there is a need to teach students to read content area materials. Each subject area has specific skills which are necessary in order to understand the content of the reading.

Lehr (1980) said

The ability to read is essential to the student success in all curricular areas and reading instruction is far too important to be confined only to one segment of the school day. Content area reading instruction deserves consideration by all elementary school teachers (p. 891).

Authorities agree that numerous skills are necessary for effective reading. These skills include locating information, organizing data, interpreting reading aids, understanding technical vocabulary, critical reading, comprehension skills such as cause and effect, sequencing, locating details, making inferences, drawing conclusions, and following directions, and utilizing flexible reading rate. Investigators suggested useful strategies and techniques to help children develop effective ways to improve reading in the content areas, but there is a lack of research to support many of these suggested strategies.
Chapter Three

PROCEDURES OF THE STUDY

The need for this project was observed when the students' inability to transfer reading skills to content materials was noted. It was observed that students lacked proficiency in applying comprehension skills, context clues, and study skills. Specific activities needed to be developed to aid teachers in instructing students in these areas.

The following procedures were used in the development of science activities to accompany the third grade science text.

The first step was to thoroughly study the text to determine areas of strength and weakness. The text was examined to specify the parts of the book such as table of contents, glossary, index, chapter titles, and headings that students should be aware of.

The second step was to read and review sources which contained information on reading in the content areas.

Third, the Student Learning Objective Indicators for the Franklin Pierce School District in the areas of reading and language were reviewed to determine which objectives would apply to the reading of the science text. (See Appendix A and B.) Science objectives have not yet been developed.

The objectives for reading and language are quite
complete in the areas of study skills and comprehension. Several objectives were added for the project to include knowledge of the parts of the book and the use of graphs and charts. Because no objectives dealt with context clues, objectives were created to provide a basis for instruction including typographic, picture, definition, and summary context clues. Objectives were sequenced as follows.

**Study Skills**

Locating Information - Alphabetizing

- Parts of the Book
- Table of Contents, Glossary, and Index
- Use of Pictures and Photographs
- Graphs
- Charts

Organizing Information - Classifying

**Context Clues**

Types - Typographic

- Picture or Diagram
- Definition
- Summary

**Comprehension**

Literal - Following Directions

- Sentence Completion
- Sequencing
- Detail and Specific Information
Main Idea
Pictures
Title
Key Words
Key Sentences

Interpretive -
  Drawing Conclusions
  Predicting Outcomes
  Cause and Effect
  Relationship Among Ideas
  Relationship Among Events

Applied -
  Comparing Works of a Similar Nature
  Generalization

Vocabulary - Development

Next the text was reviewed for difficult vocabulary. Lists were developed for each chapter along with suggested vocabulary activities.

Then enrichment activities to accompany the science text were developed to meet the objectives. The instructional objective for each activity was listed along with materials and teaching strategy. Each activity was with the page number to indicate which pages of the science text the lesson was designed to accompany. Study Skills, Context Clues, Comprehension Activities, and Vocabulary Lists were printed on different colored paper for easy identification.
The project consisted of 65 enrichment activities which were designed to accompany the third grade science text. Activities were developed to aid the teacher in improving the students' reading and use of the text.
Chapter Four

THE PROJECT

Lesson Plans Included in the Syllabus of Enrichment Activities to Enhance Content Area Reading in Science

A syllabus of 65 enrichment activities was developed to accompany the Addison Wesley science text at the third grade level. The lessons were designed to aid the children in transferring reading skills in the areas of study skills, context clues, comprehension, and vocabulary to the science textbook.

Sample activities of the project are presented on the following pages.
# TABLE OF CONTENTS

## Study Skills

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locating Information</td>
<td></td>
</tr>
<tr>
<td>Alphabetizing</td>
<td>30</td>
</tr>
<tr>
<td>Parts of the Book</td>
<td>31</td>
</tr>
<tr>
<td>Table of Contents, Glossary, and Index</td>
<td>33</td>
</tr>
<tr>
<td>Use of Pictures and Photographs</td>
<td>32</td>
</tr>
<tr>
<td>Graphs</td>
<td>37</td>
</tr>
<tr>
<td>Charts</td>
<td>39</td>
</tr>
<tr>
<td>Organizing Information</td>
<td></td>
</tr>
<tr>
<td>Classifying</td>
<td>41</td>
</tr>
</tbody>
</table>

## Context Clues

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types</td>
<td></td>
</tr>
<tr>
<td>Typographic</td>
<td>43</td>
</tr>
<tr>
<td>Picture or Diagram</td>
<td>44</td>
</tr>
<tr>
<td>Definition</td>
<td>45</td>
</tr>
<tr>
<td>Summary</td>
<td>47</td>
</tr>
</tbody>
</table>

## Comprehension

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literal</td>
<td></td>
</tr>
<tr>
<td>Following Directions</td>
<td>49</td>
</tr>
<tr>
<td>Sentence Completion</td>
<td>51</td>
</tr>
<tr>
<td>Sequencing</td>
<td>53</td>
</tr>
<tr>
<td>Detail and Specific Information</td>
<td>55</td>
</tr>
</tbody>
</table>
Main Idea

Pictures ........................................ 57
Title ............................................... 59
Key Words ........................................ 61
Key Sentences ..................................... 63

Interpretive

Drawing Conclusions ............................... 65
Predicting Outcomes ............................... 67
Cause and Effect .................................. 68
Relationship Among Ideas ........................ 71
Relationship Among Events ....................... 73

Applied

Comparing Works of a Similar Nature .......... 75
Generalization ..................................... 76

Vocabulary

Suggested Activities .............................. 78
Sample List ........................................ 80
Study Skills - Alphabetizing

Objective: The students will practice the skill of alphabetizing.

Materials: vocabulary
paper
scissors
paste

Strategy: To begin the lesson, review alphabetizing skills. Rules for alphabetizing to the first, second and third letter will be included.

The students will be given the vocabulary list for Chapter 1, Lesson 1 of the book. The class will preview the words for pronunciation and meaning.

Working in groups of two, the students will alphabetize the words by cutting them apart and placing them in order. Each group will check the words with one other group.

This activity may be repeated for the first few lessons, or as necessary.
Study Skills - Parts of the Book

Objective: The students will become aware of the various parts of the science book.

Materials: science text paper pencil chalkboard chalk

Strategy: The students will open the science text and search through it for all the different parts they can find. They are to write them on paper.

After a short time, ask the students for their findings. These will be printed on the chalkboard. A discussion will follow concerning the purpose of each part.

Suggested Parts of the Book

| About the Authors' Questions          |
| Copyright                            | Glossary          |
| Table of Contents                    | Pronunciation Guide |
| Titles                               | Definitions       |
| Pictures                             | Subtitles         |
| Lessons                              | Words in Italics  |
| Labels                               | Ideas for Review  |
| Some Things to Try                   | Test Your Understanding |
| Some Things to Do                    | Find Out on Your Own |
| Some Things to Think About           | Photographs       |
Study Skills - Use of Pictures or Photographs

Objective: The students will use pictures or photographs to aid in the understanding of the text.

Materials: science text, p. 22
          chalkboard
          chalk

Strategy: The students will be asked why books have pictures and photographs. The discussion that follows will include the fact that pictures and photographs increase our understanding of the printed material.

The students will study the picture on page 22 in order to find out everything they can. Ideas will be recorded on the chalkboard and discussed. The students will be asked to keep these ideas in mind as they read pages 22-23.

This lesson may be repeated as often as necessary. It may be used as a motivational device to accompany a lesson.
Study Skills - Using the Table of Contents, Glossary, and Index

Objective: The students will use the table of contents, glossary, and index.

Materials: science text
health text, Scott, Foresman
worksheet
pencil

Strategy: The students will be guided through the use of the table of contents, glossary, and index. They will be asked questions pertaining to each section. Since the science text contains no index, the students will use the index in the health text.
The students will be given a worksheet to complete alone or in pairs. Questions similar to those used by the teacher will be asked.
Sample questions and worksheet may be found on the following pages.
Study Skills - Using the Table of Contents, Glossary, and Index

Sample Questions:

Table of Contents
On what page will you find information on a pond community?

Where in the book will you find out about bones and how they move?

In which chapter do you find out how people can put air to work?

What kind of information will you find in Chapter 2?

I would like to see a picture of the muscles in the human body. Where might I look?

I have a test on Friday. It is about temperature. What page in the book can I use to help me study for my test?

Glossary
The word "decay" means ____________________.

I am reading a lesson in my science book. I see the word "insulator" and cannot remember what it means. Where can I find out?

What does the word "translucent" mean?

How is the word "vertebra" pronounced?

The word "compress" is found in the glossary. On which page of the text would I find the word?

Index
On which pages of the book will I find information on digestion?

Which pages of the book contain information on water pollution?

On which page of the text will I find a definition of the word "tissue"?

I am doing a report on ways of building good health. Where can I find the information I need?
Table of Contents, Glossary, Index

NAME _______________________

Directions: Answer these questions by filling in the page where the answer would be found. You will need your science book for questions that are answered by the table of contents and glossary. You will need your health book for questions that are answered by the index.

1. On which page will I find information on thermometers?

2. On which page will I find the meaning of the word "cartilage?"

3. Tell me all the pages where information on germs is found.

4. Where in the book will I find out about kinds of motion?

5. I have a test tomorrow. The test is about sunlight on the earth and the moon. What page will help me study for my test?

6. On what pages will I find information on safety in fire drills?

7. Where can I find out who the "Transparent Talking Woman" is?

8. On what page will I find the pronunciation of the word "opaque?"

9. The word "decay" is found in the glossary. On which page of the text can I find this word?
Workbook

Directions: Read the following questions. Decide whether the information would be found by looking in the table of contents, glossary, or index. Write the answer on the line.

1. What kind of information is found in Chapter 6?

2. What is the meaning of the word "compress"?

3. How do I pronounce the word "interact"?

4. What are all the pages on which I can find information on permanent teeth?

5. I need some information on shadows and light. Where will I look?

6. On what page could I find information on swimming safety?
Study Skills - Understanding and Using Graphs

Objective: The students will understand and use a simple graph.

Materials: science text, pp. 8-9, 16 worksheet

Strategy: Explain the purpose and use of graphs. As the students complete the experiment on pages 8-9, guide them through the recording of the plant growth on a simple bar graph. (A worksheet is available in the workbook that accompanies the series.) Following this the students will be given a worksheet to accompany the experiment on page 16. The worksheet will be completed in groups of two.
Directions: Record the time it takes your partner to find each color toothpick in the grass. Fill in the bar graph to show the correct number of seconds.

<table>
<thead>
<tr>
<th>Time in Seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
</tr>
<tr>
<td>240</td>
</tr>
<tr>
<td>180</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>90</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Color Toothpicks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Toothpicks</td>
</tr>
<tr>
<td>Green Toothpicks</td>
</tr>
<tr>
<td>Yellow Toothpicks</td>
</tr>
</tbody>
</table>
Study Skills - Understanding and Using Charts

Objective: The students will understand and use a simple chart.

Materials: science text, p. 37 worksheet

Strategy: Using page 37, explain charts and their use. Students should be able to answer the questions in the text on page 37 through use of the chart.

Discuss with the class how the chart might be used.

As a concluding activity, students will complete the worksheet that follows.
Study Skills - Charts

NAME____________________

Directions: After reading pages 27-30 of your science text, complete the following chart using five animals you might find in a vacant lot.

<table>
<thead>
<tr>
<th>Name of the insect or animal.</th>
<th>Where does the animal live?</th>
<th>What does the animal eat?</th>
<th>Is the animal helpful or harmful?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Now answer the following questions.
1. Do any of the animals live in similar homes?_______
   Which ones?_______________________________________
2. Do any animals eat the same foods?_______ Which ones?
   _______________________________________________
3. How many insects or animals are harmful?__________
4. How many insects or animals are helpful?__________
Study Skills - Classifying

Objective: The students will place words in groups that have similarities and give them titles or headings.

Materials: science text
- worksheet
- scissors

Strategy: This activity will take place following the completion of Chapter 1. Place the students in groups of two. Each group will be given a worksheet. They will cut the worksheet apart and place the words in groups. Each word group will be given a title or heading.
Directions: Cut these words apart. Place them in groups. Each group must have similarities. Give each group a name. You may write the name of each group on the blank pieces of paper.

<table>
<thead>
<tr>
<th>cactus</th>
<th>water</th>
<th>sand</th>
<th>frog</th>
</tr>
</thead>
<tbody>
<tr>
<td>sun</td>
<td>turtle</td>
<td>dandelion</td>
<td>fish</td>
</tr>
<tr>
<td>ants</td>
<td>mosquito</td>
<td>coyote</td>
<td>dragonfly</td>
</tr>
<tr>
<td>succulent</td>
<td>snail</td>
<td>weeds</td>
<td>waterbug</td>
</tr>
<tr>
<td>slug</td>
<td>scorpion</td>
<td>grass</td>
<td>earthworm</td>
</tr>
</tbody>
</table>
Context Clues - Typographic

Objective: The students will locate typographic context clues in the textbook.

Materials: science text, pp. 106-197

Strategy: The students will read pages 106-107. They will look for ways that new words are made to stand out on the page. These words are in italics. Discuss the significance of this. List typographic context clues on a chart of context clues.
Context Clues - Picture or Diagram

Objective: The students will locate picture or diagram context clues in the science text.

Materials: science text, pp. 106-107

Strategy: The students will turn to page 106 in the science text. They will find a word that has its meaning explained in part through the use of pictures. Explain that pictures often help to explain meanings of new words. The students will find another word on pages 106-107 which has its meaning explained by pictures.

List this type of context clue on the chart of context clues.
Context Clues - Definition

Objective: The students will locate definition context clues in the textbook.

Materials: science text, p. 109
          worksheet
          pencil

Strategy: The students will locate the typographic context clue on page 109. Next, they will read the portion at the top of the page in which the word is found. The students will find the sentence or portion of the sentence that gives the definition of the typographic context clue word. Explain that this is a definition context clue.

          Add definition context clue to the list of context clues.

          The students will complete the worksheet that follows.
Context Clues

Directions: Read the following selection. List the two types of context clues you find in the selection. Draw a picture of the word that the context clues help you to understand.

The place where one bone is joined to another bone is called a "joint." Your wrist, shoulder, and knees are joints. Can you think of some other joints in your body?

Types of context clues:
1.
2.

Picture
Context Clues - Summary

Objective: The students will practice using summary context clues.

Materials: science text
pencil
worksheet

Strategy: The students will read the following worksheet. At the bottom of the page they are to write what they think the word "control" means. Next, they are to read pages 216-217 of the science text to see if they are correct.

Explain that this is an example of a summary context clue. Add summary context clues to the chart.
Directions: Read the following paragraph carefully. At the bottom of the page write what you think the word "control" means.

To grow apples, farmers must kill organisms that hurt apples. One way is to spray the apples. The spray kills insects that eat apples. It also kills mold that might grow on apples. Is spray helpful for people who want apples? Is a farmer who uses spray to control pests being helpful?
Comprehension - Following Directions

Objective: The students will practice following directions.

Materials: worksheet pencil chalkboard chalk

Strategy: The students will use the grid on the worksheet to answer the questions which will be printed on the chalkboard. Answers are to be written in the spaces provided on the worksheet.

These questions are to be printed on the chalkboard.

1. What do a tree, elephant, and suitcase have in common? They all have a (2,3) (3,5) (2,4) (4,6) (4,2).

2. Tell me now What is it that Is over your head And under your hat? (2,5) (3,1) (2,4) (3,5) (5,4) (6,1) (5,5) (3,5)

3. Has eighty eight keys And needs no more But it can't unlock a single door. (6,1) (3,2) (5,5) (6,1) (4,6) (3,1)

4. Use the grid to write your name in numbers.

5. Use the grid to write a secret message.
Directions: Use the numbers on the grid to answer the riddles and questions on the board. Write the answers in the spaces provided.

1. 

2. 

3. 

4. 

5. 

<table>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>6</td>
<td>a</td>
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<td>c</td>
<td>d</td>
<td>e</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>f</td>
<td>g</td>
<td>h</td>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>j</td>
<td>k</td>
<td>l</td>
<td>m</td>
<td>n</td>
<td></td>
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<td>o</td>
<td>p</td>
<td>q</td>
<td>r</td>
<td></td>
<td></td>
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<td>2</td>
<td>s</td>
<td>t</td>
<td>u</td>
<td>v</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>w</td>
<td>x</td>
<td>y</td>
<td>z</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comprehension - Sentence Completion (Cloze)

Objective: The students will practice the skill of sentence completion.

Materials: worksheet
pencil
science text, p. 114

Strategy: The students will complete the worksheet by filling in the blanks with words from the bottom of the page. When complete, they will check the worksheet with page 114 of the science text. Discussion concerning the students' choices should follow.
Comprehension - Sentence Completion

NAME____________________

Directions: Use the words below to complete this worksheet. Use each word only one time.

Almost all of the movements you make happen when muscles become shorter, or contract. When a muscle contracts, ____________ pulls on the tendons. ____________ tendons then move parts ____________ the body. A muscle ____________ two bones pulls the ____________ toward each other. Not ____________ of your bones move easily. ____________ move more easily ____________

Some do not move ____________ all.

it , the of between
bones all Some others
at
Comprehension - Sequencing Events

Objective: The students will use sequencing skills.

Materials: science text, p. 136
worksheet
paper
scissors

Strategy: The students will read page 136. They will complete the worksheet by cutting the events apart and placing them in the correct order. Results may be compared with another student and discussed with the class.
Comprehension - Sequencing

Directions: Read page 136. Then close your book. Cut the events listed below apart and put them in order. Compare your answers with one other person. Check your work with page 136.

Cut a tiny piece of black paper or aluminum foil.

Get a flat piece of rectangular plastic or glass.

Put tape around all the edges of the glass so you won't get cut.

Glue the piece of foil or black paper to the center of the glass.

Fold a white card like this to make a screen.

Hold the glass so that it faces a light source and look for the shadow of the paper or foil on the screen.

Tape the edges of the screen to the glass.
Comprehension - Detail and Specific Information

Objective: The students will practice locating details and specific information.

Materials: worksheet, pp. 212-213
          science text
          pencil

Strategy: The students will read pages 212-213. They will complete the worksheet using the information on these pages.
Comprehension - Detail

Directions: Read pages 212-213 carefully. Use the information on those pages to complete this worksheet. Place an X by every true statement.

1. Most organisms produce too many young and not all of them can live.
2. There is not enough soil, water, and sunlight for all seeds to grow.
3. All seeds become adults and reproduce young.
4. Living things compete with each other for the things they need to grow.
5. A red maple tree produces thousands of seeds. Most of the seeds land quite far from the tree.
6. Young praying mantises eat insects and spiders.
7. There is always enough food for all young snakes once they hatch from their eggs.
8. Young praying mantises might eat each other to survive.
Comprehension - Main Idea - Pictures

Objective: The students will determine the main idea using pictures.

Materials: worksheet
crystal
science text, pp. 176-177

Strategy: The students will be given a worksheet with a list of main ideas. They will match those main ideas with the pictures on pages 176-177. Discuss the pictures and main ideas chosen to go with them. Give reasons for choices.
Comprehension - Main Idea

Directions: Using pages 176-177 of the science text, describe the picture that matches each group of words below.

Temperature and your health.

Heat helps us do our job.

Temperature and the weather.

Temperature and food.
Comprehension - Main Idea - Titles

Objective: The student will determine the main idea of selections by choosing or creating an appropriate title.

Materials: worksheet
           pencil
           science text, p. 95

Strategy: The students will be given a worksheet. They will read it and choose the best title for the selection. Discuss the students' selections and guide them to the realization that the title may also be the main idea. The students will check page 95 to see if the answer is correct.
Comprehension - Main Idea

NAME____________________

Directions: Read the following selection and choose the title that best describes what you have read.

In a small bag, air cannot press on many places. One small bag by itself cannot hold up a very large object.

In a large bag, air has many places to press. It does not press hard on any one place. But there are many places that it can press. The total of all these presses is large.

_____ a. Air in a Bag

_____ b. More Surface More Push

_____ c. Small Bag, Big Bag
Comprehension - Main Idea - Key Words

Objective: The students will select key words that will help in determining the main idea.

Materials: worksheet
pencil
chalkboard
chalk

Strategy: The students will be given a handout. They will read the selection and underline the key word(s) in each sentence. The key words will be discussed and listed on the chalkboard. The class will work in small groups to create a sentence that states the main idea of the selection. They will use some of the words listed on the board. The main idea sentences will be shared with the class.
Comprehension - Main Idea

NAME________________________

Directions: Read the following selection and underline the key word or words in each sentence.

Water protects many pond animals from being caught and eaten by other animals. It keeps land animals from seeing very far into the water. Often they do not see animals among the water plants or hiding on the bottom. The animals cannot smell where the fish are.

Water also protects the things living in it from quick temperature changes. Water temperature does not change as fast as air temperature.

Use this section of your paper to write down the main idea that your group chooses.
Comprehension - Main Idea - Key Sentences

Objective: The students will use key sentences in determining the main idea.

Materials: worksheet
          pencil
          chalkboard
          chalk

Strategy: Review the meaning of key sentences. The students will read the worksheet and underline the key sentence. Discuss the various sentences chosen and why they were chosen. Write the sentences on the chalkboard. The students will collectively choose the sentence that best states what the paragraph is about.
Directions: Read the following paragraph and underline the key sentence.

Where two bones meet, there is usually a pad of cartilage. Cartilage is softer than bone. It is also slippery. Cartilage helps protect bones against damage from bumps.
Comprehension - Drawing Conclusions

Objective: The students will practice drawing conclusions and making inferences.

Materials: science text, p. 112
worksheet
pencil

Strategy: The students will read page 112. Using the information from the page they will complete the worksheet.
Comprehension - Drawing Conclusions p. 112

NAME_____________________

Directions: Read page 112. Make an X on the line next to each statement that relates to what you read.

____ 1. Because of paleontologists we know much of what the world was like long ago.

____ 2. Anyone who found an old bone could be called a paleontologist.

____ 3. Paleontologists can tell how large an animal was by studying a bone from the animal.

____ 4. A paleontologist spends a lot of time in an office.

____ 5. Finding old animal bones and pieces of animal bone is hard work.
Comprehension - Predicting Outcomes

Objective: The students will predict the outcome of the events in a given situation.

Materials: science text, pp. 218-219
paper
pencil

Strategy: The students will read pages 218-219. They will make predictions concerning their own community and how it might change in the future. Predictions will be written down. List predictions on the chalkboard and discuss them.
Comprehension - Cause and Effect

Objective: The students will determine cause and effect.

Materials: science text, pp. 88-100
worksheet
pencil

Strategy: Review cause and effect. The students will complete the following worksheet at the conclusion of Chapter 4, pages 88-100. The information from the chapter will be used to complete the worksheet.

This may be a group or individual activity.
Directions: Complete the following worksheet using the information found on pages 88-100.

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>EFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blowing too much air into a balloon.</td>
<td></td>
</tr>
<tr>
<td>Throwing a piece of flat paper or throwing a piece of paper that is crumpled up.</td>
<td></td>
</tr>
<tr>
<td>Pushing a piece of crumpled paper into the bottom of a glass. Pushing the glass upside down into a tub of water.</td>
<td></td>
</tr>
<tr>
<td>Pushing an upside down glass into a tub of water and tipping the glass slightly upward.</td>
<td></td>
</tr>
<tr>
<td>CAUSE</td>
<td>EFFECT</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Air in a car tire pushes outward equally on every place inside the tire.</td>
<td>The air in the bag takes up space and pushes the book up.</td>
</tr>
<tr>
<td></td>
<td>The air in the mattress holds you up off the floor.</td>
</tr>
<tr>
<td></td>
<td>Your bike rides better with full tires.</td>
</tr>
</tbody>
</table>
Comprehension - Relationships Among Ideas

Objective: The student will find relationships among ideas.

Materials: science text, pp. 218-219
worksheet
pencil

Strategy: The students will reread pages 218-219. Using the information from these pages they will complete the worksheet. This may be an individual or small group activity. Discussion will follow.
Directions: Use the information on pages 218-219 to complete this worksheet. Make an X by all statements that are true about what you read.

1. Wherever people are, their actions affect the earth in some way.

2. People always know how their actions will affect the earth.

3. The actions of people are not always helpful to the earth.

4. People cannot change mountains, forests, or rivers.

5. People must work together to determine how their actions will affect their community.
Comprehension - Relationships Among Events

Objective: The students will find relationships among events.

Materials: science text, pp. 176-200
worksheet
pencil

Strategy: This activity will be completed at the close of Chapter 8. The students will work in small groups. Each group will complete the worksheet using the information from Chapter 8. Discussion will follow.
Comprehension - Relationships pp. 176-200

Directions: Make an X next to all statements that show the relationship of temperature to the various events in Chapter 8 of the science text. Be prepared to discuss your answers.

____ 1. Warm air will cause a bubble to expand; cool air will cause it to contract.

____ 2. Your skin is a very good test of temperature. If you touch water with your finger, you can easily tell small differences in temperature.

____ 3. An air thermometer works because as air warms up it expands and pushes liquid out; as air cools it contracts and allows liquid to return.

____ 4. When your house is well insulated, snow on the roof will melt slowly.

____ 5. A straw, a stick, and a rubber band will conduct heat very well.
Comprehension - Comparing Works of a Similar Nature

Objective: The students will compare similar materials.

Materials: science text, pp. 106-111
           health text (Scott, Foresman) p. 24
           paper
           pencil

Strategy: The students will read pages 106-111 of the science text and page 24 of the health text. They will list the ways in which the descriptions of bones are alike. Discussion will follow.

Next, the class will look for differences in the material. Discussion will follow.
Comprehension - Generalization

Objective: The students will make generalizations using the material in the science text and their background experience.

Materials: science text, pp. 130-135
worksheet
pencil

Strategy: The students will use information presented on pages 130-135 to help them complete the worksheet. This may be an individual or group activity.
Comprehension - Generalization

NAME________________________

Directions: Read the following statements. Using the ideas from pages 130-135 and what you know about light sources and shadows, make an X by the statements you can support.

1. To make a shadow you must have an object and a light source.
2. No matter how many light sources you have on an object, there will be only one shadow.
3. All light sources produce their own light.
4. The location of a light source determines the location of the shadow.
5. The sun is a light source.
6. The sun always makes a shadow.
7. Any day that you go outside, you will have a shadow.

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SUGGESTED VOCABULARY ACTIVITIES

1. Alphabetize the vocabulary list.

2. Matching similar (or different) words.

3. Write synonyms (or antonyms) for given words.

4. Match the words which are closest in meaning.

5. Match two or more words that are similar (or different).

   Example: Underline the words that are similar to (or different from) the first word.

   DISSOLVE   decay   disappear   depend

6. Select the most precise word for completing the sentence.

   Example:
   The old log in the forest was decaying/interacting/dissolving.

7. Assign words to find out more about. Use other sources to research the word.

8. Divide the class into groups to work in panels. One group is to simply define the words and use them in sentences. A second group is to develop questions to ask about the words. A third group is to find in-depth information about the word. They are the experts and should be prepared to answer the questions, or if necessary, find answers to the questions.

9. Use the words in original sentences.

10. Play classroom baseball. In order to make a hit the student must define the word. For a double, the student must define and spell the word. For a triple, the student must define, spell, and use the word in a sentence. For a home run, the student must do all of the above and explain how the word relates to the science chapter.

11. Create a crossword puzzle using the words and definitions.

12. Play BINGO. The words appear on the BINGO cards. The definitions are the clues.
13. To evaluate the understanding of vocabulary terms, the students will categorize the words. Each category should be given a title. Students should be able to explain why the words are placed in each group. This may be a group or individual activity.
VOCABULARY LIST
Chapter 1, Lesson 1

decay
interact
disappears
soil
label
microscope
magnifying glass
mixture
soil chemicals
aphids
depend
experiment
gases
sample
centimetre
oxygen
carbon dioxide
elodea
aquarium
chemical action
Chapter Five
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Investigators in the field of content area reading indicated a need for instruction in specific skills. This was substantiated by students' performance in the classroom. Research in the area of science indicated that the majority of learning in science takes place through reading. Therefore, students must be instructed and aided to read the science text effectively.

This project consisted of 65 enrichment activities designed to accompany the third grade science text. Activities were intended to meet objectives in the areas of study skills, context clues, and comprehension. Vocabulary lists and suggested activities were also developed.

The project was developed to aid teachers in instructing students in the use of the science textbook through specific reading skills.

Conclusions

Several enrichment activities were implemented in the classroom. They were successful. Students exhibited more complete understanding of their text and the function of its parts. When encountering a new word students were observed to use the glossary. They indicated some knowledge of con-
text clues, however further instruction was necessary in order to determine the effectiveness of context clue activities. Vocabulary activities proved successful in aiding students in the understanding of the text. The entire project must now be implemented in order to determine its success. Activities should then be evaluated and revised as necessary.

It was found that while the district objectives in the areas of reading and language were fairly complete, they did not include the understanding of the parts of the book and their use.

The district reading series adoption included the Houghton-Mifflin series, 1976. While this series provided instruction in a number of study skills and context clues, transfer of these skills to content areas including science was not observed.

Recommendations

At the completion of the project the following recommendations were made.

The project should be tested at the third grade level and should be revised according to the results.

Further activities should be developed for other content areas and could be enlarged to include several grade levels.

The reading objectives for the Franklin Pierce School District should be revised to include more complete instruction in the use of context clues. Attention should be given to the
to the skills needed to read the textbook other than the basal series in order to assure that reading skills are transferred to the content areas.
BIBLIOGRAPHY


APPENDIX
OBJECTIVE 1 — The student can use visual perception, word analysis, and vocabulary development skills to decode information.

INDICATORS

1.5 Identify beginning (initial) sounds in words.
1.6 Identify ending (final) sounds in words.
1.8 Print letters of the alphabet.
1.9 Read words with common rhyming elements.
1.10 Use context clues to determine word meaning.
1.11 Read words containing initial blends: R, S, L.
1.12 Read words containing major initial and/or final consonant digraphs.

1.13 Read words containing long vowel sounds.
1.14 Read words containing short vowel sounds.
1.15 Rhyme words with like, unlike spelling.
1.16 Recognize plural words.
1.19 Recognize and read simple punctuation: period, comma, question mark, exclamation mark.
1.21 Recognize and use table of contents.
1.22 Recognize number of syllables.

OBJECTIVE 2 — The student can read and comprehend content.
(The student can read and view content literally, interpretively and critically.)

INDICATORS

2.1 Discuss a story from pictures.
2.2 Recognize, recall, and select details.
2.3 Recognize and recall sequence.
2.4 Follow directions.
2.5 Identify main idea.
2.6 Predict outcomes from preliminary events.
2.7 Classify information.
2.8 Identify cause-effect relationships.

2.9 Identify mood of characters.
2.10 Distinguish between fiction and non-fiction.
2.11 Determine the 5 W's and How in reading material appropriate to reading level.
2.12 Sequence what comes at the beginning, middle and end of a written selection at appropriate reading level.

2.13 Compare and contrast information.
2.17 Skim for information.
2.18 Read a newspaper, magazines to supply more recent information than textbooks could contain.
2.19 Use the telephone book and card catalogue.
2.20 Read, interpret and select details from poetry.
OBJECTIVE 3 — The student can organize, develop and produce a coherent piece of writing.

INDICATORS

3.1 Use manuscript and/or cursive writing with appropriate letter formation, slant and spacing.
3.2 Compose a complete sentence.
3.7 Spell the most commonly used words at his grade level.
3.9 Use the singular and plural of nouns in sentences.
3.11 Distinguish between common nouns (city, car, boy) and proper nouns (Tacoma, Buick, John) and know that proper nouns are capitalized.
3.13 Use the appropriate verb form in sentences to show past and present tense.

OBJECTIVE 4 — The student recognizes a variety of reference materials and can utilize these materials when gathering information on a given subject.

INDICATORS

4.1 Alphabetize a group of words.
4.3 Use guide words and guide letters when locating information within a dictionary and/or encyclopedia.
4.5 Use a table of contents of a book or magazine to find information.
4.8 Use a dictionary to find the definition of a word.

OBJECTIVE 5 — The student understands the basic mechanics used in writing.

INDICATORS

5.1 Use a period at the end of a statement.
5.2 Use a period in abbreviation.
5.3 Use a question mark following a question.
5.6 Identify an exclamation by placing an exclamation mark after it.
5.7 Use commas to separate items in a series.
5.9 Use commas to set off items in dates and addresses.
5.10 Use a comma after the salutation of a friendly letter and after the complimentary closing.
5.12 Use apostrophes in possessives.
5.13 Use capital letters at the beginning of sentences, names, places, dates, major words in titles and for the pronoun “I”.
5.14 Use apostrophes in contractions.