AN ABSTRACT OF THE THESIS OF

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Title: A COMPARISON OF THE INDUCTIVE AND DEDUCTIVE GROUP APPROACHES IN TEACHING SELECTED PHONIC GENERALIZATIONS TO SECOND GRADE CHILDREN

Abstract approved: Redacted for privacy Dr. Ned Marksheffel

The purpose of this study was to answer three questions in terms of learning methodology: (1) Is the inductive or deductive approach more effective in teaching phonic generalizations to second grade children? (2) Is the inductive or deductive approach more effective in promoting retention ability after a three week interim? (3) Is the inductive or deductive approach more effective in promoting greater transfer of learning?

Three second grade classes in the Portland Public Schools, Portland, Oregon participated in this study concerning teaching methodology and eight phonic generalizations. Three classes of approximately twenty-five children each were randomly assigned to experimental and control groups by this researcher. The three schools in which these classes were located were described as being
in average socio-economic areas as determined by Portland Public School District criteria.

In order to determine a child's ability to analyze vocabulary terms, an Individual Informal Oral Phonic Generalization Test was constructed by this writer based on eight phonic generalizations. The construction of the phonic instrument was based upon a survey of vocabulary terms found in seven basal reader series used in the Portland Public Schools developmental reading program. The Individual Informal Oral Phonic Generalization Test consisted of three test forms containing sixteen vocabulary terms and sixteen nonsense terms.

Three second grade classrooms participated in this study with two classes comprising the experimental groups and a third class the control group. Experimental group I was taught four generalizations via the inductive approach for two weeks and then four different generalizations by the deductive approach during the final two weeks. Experimental group II was taught four phonic generalizations via the inductive approach for two weeks and then four different generalizations by the deductive approach during the final two weeks.

The combined test performances of experimental groups I and II on eight phonic generalizations taught inductively comprised the inductive methodology group. The combined test performances of experimental groups I and II on eight phonic generalizations taught
deductively comprised the deductive methodology group.

Experimental groups I and II were taught eight phonic generalizations over a period of four weeks time using inductive-deductive lesson plans specifically designed for this experimentation. Each phonic generalization lesson was presented to the whole class during a thirty minute period.

Findings and Conclusions

To determine whether method alone constituted a significant variable when instructing second grade children to utilize phonic generalizations, the study analyzed the scores made by seventy-three second grade youngsters on three informal phonic generalization tests.

The t-test statistic comparing the difference in mean scores of the inductive and deductive methods indicated that significant differences did not exist between the inductive and deductive groups on three phonic tests, a Pre-test, a Measure of Learning, and a Measure of Retention.

When comparing the inductive-deductive methods with the control group method on the Pre-test the results showed no differences. However, when comparing the inductive-deductive methods with the control group method on a Measure of Learning test the findings showed a difference significant at the .05 level favoring the deductive
group method on the total mean score.

A comparison of the inductive-deductive groups with the control group in terms of retention revealed significant differences did not exist between the groups. This study indicated that differences in retention and ability to transfer knowledge were not significant when comparing the inductive-deductive groups and the control group. Method alone as exemplified in this research did not appear to be a significant factor in terms of immediate learning, retention, or transfer of learning.
A Comparison of the Inductive and Deductive Group Approaches in Teaching Selected Phonic Generalizations to Second Grade Children

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A COMPARISON OF THE INDUCTIVE AND DEDUCTIVE GROUP APPROACHES IN TEACHING SELECTED PHONIC GENERALIZATIONS TO SECOND GRADE CHILDREN

CHAPTER I

INTRODUCTION

Background of the Study

The major purpose of this study is to compare the inductive and deductive group approaches in teaching eight phonic generalizations to second grade children. Specifically, the study will determine whether significant differences exist among groups of children taught inductively and deductively, and determine if differences persist after an interval of three weeks time.

Present Status of Phonic Instruction

The interest and concern of educators regarding the place of phonics in reading instruction has generated a focus of attention on this vital subject. Dr. James B. Conant explored the status and purpose of phonic instruction in the developmental reading program with a group of educationists specializing in various phases of the field of reading. The conferees attending this meeting which convened in New York on September 22 and 23, in 1961, represented a multiplicity of views pertaining to phonic instruction.
The Conference members supported the following concepts relating to phonic instruction in a developmental reading program.

A quotation from their report indicates:

> We consider phonics one of the essential skills that help children identify printed words that they have not seen before and then understand the meaning that those words represent. Without phonics most children cannot become self-reliant, discriminating efficient readers. (40:3)

Further elucidation as to the role of phonic instruction in the reading program was revealed in this additional statement by the Conference group, "...the whole purpose of reading is to get meaning. That is why good teachers insist upon uniting phonics instruction with instruction in the word recognition skills through which meaning is ascertained." (32:8)

Mary Austin states,

> While it has been recommended that no one method of word attack, in particular, phonetic analysis, be used to the exclusion of all others, it is assumed that phonetic and structural analysis will be included in any list of techniques of word recognition. (2:146)

Many authorities in the field of reading agree that the incorporation of phonic instruction in current basal reader programs is generally accepted by educators at this time. (52:284, 18:225, 32:92, 51:565)

Dechant indicates that phonics is no longer a real issue in reading and that virtually all systematized approaches to reading
teach phonics in one way or another. He further emphasizes this concept in stating that, "It is now taken for granted that phonics have a rightful place in any reading program." (22:195-237)

According to Dolch:

Phonics have a recognized place in the teaching of reading. Despite many complaints about the ineffective teaching of phonics there is common agreement that the child who cannot sound out the new words he meets is tremendously handicapped in any independent reading." (24:120)

Another researcher who has explored this area in some depth, Dr. Heilman, feels that whether phonic analysis should or should not be taught as part of the reading program is no longer an issue. He contends that children need this important ability in order to become independent readers. (32:92)

Betts (6) is rather emphatic in his statement regarding the importance of phonics in a developmental reading program. His response to the question of whether children should be taught how to use phonic skills is as follows: "The answer is Yes! So far as we are concerned this is not a topic for debate. The basic questions are: When should phonics be taught? How should phonics be taught?" (6:548)

Dr. Jeanne S. Chall, (15) Harvard University professor of education investigated the existing research studies comparing various approaches to beginning reading instruction.
Utilizing a $41,000 grant from the Carnegie Corporation in 1962, Jeanne Chall devoted three years to the exploration of reading research published between 1912 and 1965. A primary concern of the author in this endeavor was with those studies investigating reading methodology or the "how of beginning reading instruction." (15:5)

Following is a major conclusion of Dr. Chall's relative to this study:

My review of the research from the laboratory, the classroom, and the clinic points to the need for a correction in beginning reading instructional methods. Most schoolchildren in the United States are taught to read by what I have termed a meaning-emphasis method. Yet the research from 1912 to 1965 indicates that a code-emphasis method - i.e., one that views beginning reading as essentially different from mature reading and emphasizes learning of the printed code for the spoken language - produces better results, at least up to the point where sufficient evidence seems to be available, the end of the third grade. (15:307)

Dr. Chall continues:

A beginning code-emphasis program will not cure all reading ills. It cannot guarantee that all children will learn to read easily. Nor have the results of meaning-emphasis programs been so disastrous that all academic and emotional failures can be blamed on them, as some proponents and publishers of new code-emphasis programs claim. But the evidence does show that a changeover to code-emphasis programs for the beginner can improve the situation somewhat, and in this all to imperfect world even a small
improvement is worth working for. I believe that method changes if made in the right spirit, will lead to improved reading standards. (15:309)

Further research data (56) reveals the importance of phonics methodology or a code-emphasis approach in teaching developmental reading to children. It is interesting to note that the U.S. Office of Education First Grade Reading Studies (56) indicated twelve out of twenty-seven research projects comparing a phonic approach or code-emphasis methodology in teaching beginning reading with other approaches.

Mildred Wittick (60) reviewed current trends in phonic instruction and concludes:

In recent revisions of the major series, emphasis has shifted to earlier attention to the teaching of sounds and letters. The skills needed for phonics analysis have appeared in the basal reader programs for many years. The major change that has taken place is to introduce these earlier and, in some instances, in a different sequence. Most programs place strong emphasis on auditory skills and early independence in word attack. (57:76)

Durkin (25) has perhaps summarized the general consensus of experts regarding phonics instruction in current reading programs when she states, "Phonics is useful, phonics is important, phonics is necessary in a really good reading program." (25:48)
The Present Status of Phonic Generalizations

The inclusion of phonic generalizations in developmental reading curricula has been accepted by many educators as an integral facet of reading instruction. (52:290-291) (31:210) (23:332) (4) The divergency of viewpoints occurs primarily in the realms of methodology and content of the program. (1:28)

Illustrative of the differing positions involving phonic generalizations is the statement by Heilman indicating:

Knowledge of phonic generalizations is useful to children. In general, material should be presented in such a way that the application of a given generalization evolves out of actual word study. (32:19)

Dr. Heilman further elaborates his stand on phonic generalizations by stating several guidelines which have been included below:

All phonic principles necessary for a child to become an independent reader should be taught.

It is not necessary to teach phonic generalizations which have very limited applications. The few words covered by such generalizations should be taught as sight words. (32:94)

Tinker and McCullough are of the opinion that:

...authoritarian imposition of formal phonetic rules by the teacher should be avoided. When a child has had sufficient experiences with words he should be guided to formulate generalizations (rules) in his own words and note exceptions to those generalizations. In this way, he will
arrive at the few essential and most dependable phonetic rules... (55:156)

Durkin indicates that what is significant is that the child understand the generalization and can use it in his analysis of new words. (25:29)

According to Mildred Hart Bailey, phonic generalizations have long merited a significant place in phonic instruction. Textbook authors in reading methodology recommend phonic generalizations as an important segment of the reading program, and basal reading series include phonic generalizations in the instructional program. (4:413)

Phonic generalizations, then, clearly constitute a fundamental segment of developmental reading programs. Research exploring particular aspects of phonic generalizations relative to instructional techniques would be of benefit to many individuals and would advance knowledge in this important area.

**Phonic Methodology**

The methodology employed to instruct children in the application of phonic generalizations has not been explored with the same intensity and energy as have other aspects of phonic instruction. (48:887) Russell and Fea state that, "Studies of different methods of teaching phonics are also rare and have frequently been conducted by enthusiastic proponents of one of the
methods. Fundamental differences between methods have seldom been explored; rather, comparisons of mere superficialities have usually been undertaken. " (48:887)

Clymer, (17) and Bailey, (45) are of the opinion that only classroom experimentation will elucidate whether children can apply phonic generalizations.

Emans, (26) recommends, "Future studies need to be conducted to develop procedures for teaching generalizations and to try the procedures under controlled experimental conditions. (26:425)

Weintraub states that, "More important...we must begin to explore ways of identifying which children learn best by which approaches. To this point, research has not addressed itself to any great extent." (59:39)

Since instruction in phonic generalizations is an integral segment in the developmental reading program it would be beneficial to investigate specific methods of transmitting phonic concepts to children in an experimental situation.

It is hoped that this study will extend knowledge in the area of the inductive and deductive approaches in teaching phonic generalizations to second grade children, and elucidate differences in retention and transfer value at this level of reading.

Definition of Terms

The following terms used in this study have varied definitions
and connotations according to different authors in the field of education and psychology. Since exact definitions will serve to clarify this study these terms will be defined as:

**Deductive Method.** A method in teaching that proceeds from rules or generalizations to examples and, subsequently, to conclusions or to the application of the generalizations. (29:158)

**Inductive Method.** A method of teaching based on the presentation to the learner of a sufficient number of specific examples to enable him to arrive at a definite rule, principle or fact;... and which leads to the subsequent application of these rules, principles or facts. (29:285)

**Phonics.** It is really translating parts of written words into the sound they represent. (6:349)

**Phonic Generalization.** Often called "phonic principle" or "phonic rule", is a term used in this investigation to refer to statements designed to assist children in understanding that "in printed words there are certain visual clues that aid in determining consonant sounds, vowel sounds, syllabic divisions, and accent." (3:8)

**Delimitations of the Study**

Eight phonic generalizations previously identified by Theodore Clymer (17) in a study of forty-five phonic generalizations were utilized in this investigation.

Vocabulary terms for this study were taken from seven basal reader series at levels PP1 through 22. All terms to which a generalization was applicable were included in the tabulation of total number of words at each reading level. These seven basal
reader series were published in the United States between 1957 and 1963. Webster's *New World Dictionary of the American Language College Edition* (1966) was used as a pronunciation guide for all words in this study.

**Purposes of the Study**

The purposes of this study are (1) to investigate the performance of second grade children taught eight phonic generalizations by either an inductive or deductive approach, (2) to explore the retention factor after a three week interim of time, and (3) to determine the percentage and total number of words to which each of the eight phonic generalizations applies in seven different basal reader series at level PP$^1$ through level 2$^2$.

**Significance of the Study**

The importance of selected phonic generalizations has been elucidated by numerous authorities in the field of reading and several research studies have been conducted with the specific purpose of identifying generalizations of high utility. (17:4, 13:46, 26)

It now seems reasonable and necessary to pursue the question of instructional methodology regarding phonic generalizations in order to contribute information which might be of value to reading instructors at the elementary level of endeavor.
Additional knowledge in this area of phonic methodology should be of benefit to those who are teaching elementary pupils functioning at the second grade level.
CHAPTER II

REVIEW OF THE LITERATURE

The present study is concerned with determining answers to the questions of which approach, inductive or deductive, is most useful in teaching second grade children phonic generalizations and which of these two approaches will prove to be more effective in terms of transfer and retention values.

Certain aspects of these questions have been explored by other researchers in the field of reading and allied fields; however, no researcher has addressed himself to these specific questions concerning second grade children and phonic generalizations.

Related Investigations Concerning Phonics Elements

Several early studies by Vogel, Jaycox, and Washburne, (57) Horn, (35) Lichtenstein, (42) and McKinnis and Templin, (41) contributed important information to educators' understanding of the problems of sound-symbol relationships confronting youngsters and the relationship between phonic ability and reading ability.

In 1923, authors Vogel, Jaycox and Washburne, (57) pursued the question of which phonograms would be most helpful to first and second grade youngsters when phonetically analyzing new vocabulary
terms. A list of high utility phonograms and ranked consonant blends resulted from this study with recommendations as to when an instructor might present these elements and also which elements were of greater importance. (52)

Ernest Horn (35) explored the difficulties confronting beginning readers when attempting to develop a sound-symbol association relative to the vowel-letter a. Numerous sound-value inconsistencies regarding the letter a were elucidated and tabulated by Horn in this research study, with special emphasis devoted to the sound interpretation of the ea digraph and the influence of syllabication upon pronunciation of this element. Horn's investigation presented useful evidence to elementary classroom teachers that would assist them in guiding their instructional efforts with beginning readers. (35)

Lichtenstein (42) studied the relationship between the sounds and names of letters of the alphabet and determined that ten consonant names begin with the sound of the letter, as in b, and that children experienced less difficulty with these ten letters than the remaining consonants. The most challenging letters were f, h, l, m, n, q, r, s, w, x, and y which have names differing from the sounds they represent. Lichtenstein is of the opinion that one of the major reasons for difficulty in sounding is that children are generalizing a rule regarding certain consonants and are applying
this rule to all letters regardless of applicability. (42)

The study of Templin and McKinnis, (54) attempted "to
determine whether, and to what extent, phonic ability, as measured
by a reliable instrument, is related to reading ability as measured
by certain standardized reading tests." (54:190)

The individual oral phonic ability test administered to the
students consisted of one hundred nonsense words to be pronounced
by each student during a ten to fifteen minute testing period. The
155 students involved in this study were 5th-8th grade pupils from
a mid-western community with distribution of students approxima-
tely equal among the four grades.

Reliability of the Individual Phonic Test was determined by
the odd-even method with the coefficient of reliability for the
students at $0.94 \pm 0.006$. (54:191)

To determine the relationship between phonic ability and
reading, the results on the Individual Phonic Test were correlated
with the results on two standardized reading tests. The two
standardized reading tests utilized in this study were the New
Stanford Reading Test and the Iowa Silent Reading Test (Compre-
hension and Rate) with the results found to be:
Reading Criterion | Correlation with Phonic Ability
--- | ---
New Stanford Reading Test | .70⁺ .027
Iowa Silent Reading Test (Comprehension) | .66⁺ .030
Iowa Silent Reading Test (Rate) | .55⁺ .038

Tiffin and McKinnis indicate that, "These correlations show with reasonable certainty that phonic ability is significantly related to reading ability among the pupils studied." (54:191)

**Literature Related to Phonic Generalizations**

Oaks (46) explored the vowel situations occurring in selected primary basal reader series through a detailed investigation of the vowels and vowel combinations. The author asked the following questions:

1. **What types of vowel situations occur in the vocabularies of basal readers designed for use in the primary grades?**
   a. At what reader level does each vowel situation first appear?
   b. What is the incidence of each vowel situation at each reader level?

2. **What principles are basic to the pronunciation of the vowels?**
   a. What is the incidence of applications of each of the principles?
   b. What is the incidence of exceptions to these principles?

3. **What other factors are involved in the pronunciation of the vowels?**
   a. What is the incidence of the vowel situations in which the pronunciation is modified by lack
of stress?

b. What is the incidence of situations in which the vowel is silent?

A total of 1,966 words were selected from Emmett A. Betts' "Primary Reading Vocabulary Studies" which listed vocabularies from basal readers published between 1932 and 1939.

Eight principles were elucidated as being applicable to the present vocabulary and are as follows:

I. When a stressed syllable ends in "e", the first vowel in the syllable has its own "long" sound and the final e is silent.

II. When a stressed syllable containing only one vowel ends with that vowel, the vowel has its own "long" sound.

III. When there is only one vowel in a stressed syllable and that vowel is followed by a consonant, the vowel has its "short" sound.

IV. When a word of more than one syllable ends with the letter "y", the final "y" has the sound of "short" i. When a word of more than one syllable ends with the letters "ey", the "e" is silent and the "y" again has the sound of "short" i.

V. When a syllable contains only the one vowel, "a", followed by the letters "l" or "w", the sound of the "a" rhymes with the word "saw".

VI. When there are two adjacent vowels in a syllable, the first vowel has its own "long" sound and the second vowel is silent.

VII. When, in a word of more than one syllable, the final syllable ends in the letters "le", the "l" becomes syllabic (i.e., it functions as a
vowel) and is pronounced, but the "e" is silent.

VIII. When, in a word of more than one syllable, the final syllable ends in the letters "en", the "n" becomes syllabic and is pronounced, but the "e" is silent. (46:609-610)

Oaks then ranked the eight phonic principles in order of descending value based on the percentages of application at designated grade levels. At the second grade level Oaks found:

Second-reader level:
(a) Principles IV, VII, and VIII (100 percent)
(b) Principle V (96 percent)
(c) Principle II (85 percent)
(d) Principle I (67 percent)
(e) Principle III (66 percent)
(f) Principle VI (47 percent) (46:612)

The conclusions expressed by Oaks indicate that eight vowel principles operated as applications or exceptions in approximately 70 percent of the total vowel situations. The principles were applicable in approximately 50 percent of the total vowel situations. It was noted that the principles with high percentages of application represented a relatively small number of vowel situations. (46)

An investigation by Black, (16) focusing on the pronunciation of consonants in syllabic situations at the primary reading level resulted in some important findings. Data were obtained for these questions:

1. What is the incidence of the following consonant situations, when analyzed according
to their (a) initial and (b) final syllabic positions:

a. single consonant letters?
b. consonant digraphs?
c. consonant trigraphs?
d. consonant blends?
e. syllabic consonants and blends?

2. What is the incidence of letter r situations?

3. What is the incidence of consonant phonograms containing silent letters? (16:618)

This study used the vocabulary taken from the Betts' Primary Reading Vocabulary Study and selected only base forms and compound words for analysis. These terms also appeared in at least ten of fourteen different basal reader series utilized at levels ranging from primer through third grade.

Black derived several conclusions from this study:

1. Consonant situations in syllables appear to be almost evenly distributed between initial and final positions in the syllables. Very few consonant situations appear in the medial parts of syllables.

   a. Single letter consonant phonograms constitute the majority of the consonant situations tabulated. These phonograms tend to occur more frequently in the initial parts of the syllables than in the final parts.

   b. On the basis of incidence, consonant digraphs rank third in importance among the classifications. More than twice as many occur in the final positions as in the initial parts of the syllables.

   c. Consonant trigraphs rank fifth in
importance on the basis of incidence and are found only in final syllabic positions.

d. The majority of the consonant blends occur in initial syllabic positions. When ranked in order of incidence, they are second in importance.

e. Syllabic consonants and syllabic blends appear only in the final syllables of the words. Ranked according to decreasing incidence they are fourth place.

f. Some consonant situations appear only in the medial parts of syllables. These, with a few other consonant phonograms not easily classified, account for only a small percent of the total consonant situations.

2. More than twice as many consonant and vowel-colored r situations appear in final syllabic positions than in initial syllabic positions. The vowel-colored r's and consonant r appear at all reader levels, but r in combination with other consonants appears, principally, at the higher reader levels.

3. Consonant situations involving silent letters appear most frequently in final syllabic positions and at the higher reader levels. (16:621, 622)

Burrows and Lourie, (13) investigated the validity of the "two-vowel-together rule" by analyzing 5,000 high frequency words included in the Rinsland study. Webster's New Collegiate Dictionary was utilized as the pronunciation authority for all words containing adjacent vowels. Authors Burrows and Lourie found a total of 1,728 words which the two-vowel-together rule could apply. They included the vowels a, e, i, o, u, y, and w and determined
that only 688 words out of a total of 1,728 words followed the generalization. Their conclusion was that if a student applied this rule to words he would have less than a fifty-fifty chance of being right according to the results of this study. (13)

Edward Fry, (27) concerned himself with determining the frequency of use of the phonic principles with the widest applicability. The author formulated a set of rules based on personal experiences in a reading clinic situation. These principles were then "ranked according to their frequency of use as determined by Moore's frequency count of 3,000 English words." (27:759)

Fry noted these findings:

1. The relative high importance of the "schwa" sound.

2. The small number of combinations (seven) for the long vowel digraph.

3. The importance of the R Rule and the Y Rule, including the teaching that Y has a long E sound at the end of a word.

4. The fact that there are relatively few exceptions to these rules and that none other than those mentioned are worth teaching beginning readers. (27:760)

Phonic Generalization Studies Pertinent to the Present Investigation

The eight phonic generalizations for the present study were selected from the Clymer (17) list of forty-five phonic
generalizations abstracted from teachers' manuals of four widely used sets of readers. (See Table 1)

Clymer compiled a list of twenty-six hundred vocabulary terms derived from four previously mentioned basic reading series, and the Gates Reading Vocabulary for Primary Grades for use in this study. In addition, Webster's New Collegiate Dictionary was used as the pronunciation authority in determining phonetic re-spelling and syllabic division of all words.

The phonic generalizations were checked against the composite list of terms to determine words conforming to the generalizations and specific exceptions to the generalizations.

"A 'percent of utility' was computed for each generalization by dividing the number of words pronounced as the generalization claimed by the total number of words to which the generalization could be expected to apply." (17:254)

A "reasonable" degree of application was determined after the percent of utility was computed for a specific generalization. Two criteria were stated as to what comprised a "reasonable" degree of application. One criterion stipulated that the composite vocabulary list contain at least twenty words to which the generalization could be applied. A 75 percent utility was the second criterion which meant that a student applying the generalization to twenty words could pronounce 15 of the terms correctly.
Table 1. Comparison of Utility Levels from Three Phonic Generalization Studies Relative to Eight Phonic Generalizations Selected for this Investigation.

<table>
<thead>
<tr>
<th>Study</th>
<th>Generalization</th>
<th>Percent of Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clymer</td>
<td>(22) When C is followed by E or I, the sound of S is likely to be heard.</td>
<td>96</td>
</tr>
<tr>
<td>Bailey</td>
<td>(22)</td>
<td>92</td>
</tr>
<tr>
<td>Emans</td>
<td>(22)</td>
<td>90</td>
</tr>
<tr>
<td>Clymer</td>
<td>(23) When C is followed by O or A, the sound of K is likely to be heard.</td>
<td>100</td>
</tr>
<tr>
<td>Bailey</td>
<td>(23)</td>
<td>100</td>
</tr>
<tr>
<td>Emans</td>
<td>(23)</td>
<td>100</td>
</tr>
<tr>
<td>Clymer</td>
<td>(28) When two of the same consonants are side by side only one is heard.</td>
<td>99</td>
</tr>
<tr>
<td>Bailey</td>
<td>(28)</td>
<td>98</td>
</tr>
<tr>
<td>Emans</td>
<td>(28)</td>
<td>91</td>
</tr>
<tr>
<td>Clymer</td>
<td>(44) When there is one E in a word that ends in a consonant, the E usually has a short sound.</td>
<td>76</td>
</tr>
<tr>
<td>Bailey</td>
<td>(44)</td>
<td>92</td>
</tr>
<tr>
<td>Emans</td>
<td>(44)</td>
<td>83</td>
</tr>
<tr>
<td>Clymer</td>
<td>(29) When a word ends in CK, it has the same sound as in look.</td>
<td>100</td>
</tr>
<tr>
<td>Bailey</td>
<td>(29)</td>
<td>100</td>
</tr>
<tr>
<td>Emans</td>
<td>(29)</td>
<td>100</td>
</tr>
</tbody>
</table>

Continued
<table>
<thead>
<tr>
<th>Study</th>
<th>Generalization</th>
<th>Percent of Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clymer</td>
<td>Words having double E usually have the long E sound.</td>
<td>98</td>
</tr>
<tr>
<td>Bailey</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Emans</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Clymer</td>
<td>When C and H are next to each other, they make only one sound.</td>
<td>100</td>
</tr>
<tr>
<td>Bailey</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Emans</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Clymer</td>
<td>The R gives the preceding vowel a sound that is neither long nor short.</td>
<td>78</td>
</tr>
<tr>
<td>Bailey</td>
<td></td>
<td>86</td>
</tr>
<tr>
<td>Emans</td>
<td></td>
<td>82</td>
</tr>
</tbody>
</table>
Eighteen generalizations out of the total forty-five generalizations adhered to the criteria established by Clymer. This researcher selected eight of the qualifying generalizations for inclusion in this investigation. The eight generalizations are numbers: 22, 23, 28, 44, 29, 8, 20 and 5. (See Table 2)

Additional conclusions by Clymer are as follows:

In evaluating this initial venture in testing the utility of phonic generalizations, it seems quite clear that many generalizations which are commonly taught are of limited value. Certainly the study indicates that we should give careful attention to pointing out the many exceptions to most of the generalizations that we teach...

This study does not, of course, answer the questions of which generalizations primary children can apply in working out the pronunciation of unknown words. The answer to the question of the primary child's ability to apply these and other generalizations will come only through classroom experimentation. (17:255, 258)

Mildred Hart Bailey (4) elected to investigate the utility of phonic generalizations in grades one through six by utilizing certain data from the Clymer study and expanded it in terms of additional vocabulary and reading grade levels included. A question that the author wished to resolve concerned the results one might obtain when applying the forty-five phonic generalizations to vocabulary terms found in grades one through six rather than limiting it to only primary levels.
Table 2. Eight Phonic Generalizations Selected for this Study from the Theodore Clymer Investigation (17).

<table>
<thead>
<tr>
<th>Number of Generalization</th>
<th>Statement of Generalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>(22)</td>
<td>When C is followed by E or I, the sound of S is likely to be heard.</td>
</tr>
<tr>
<td>(23)</td>
<td>When C is followed by O or A, the sound of K is likely to be heard.</td>
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<tr>
<td>(28)</td>
<td>When two of the same consonants are side by side only one is heard.</td>
</tr>
<tr>
<td>(44)</td>
<td>When there is one E in a word that ends in a consonant, the E usually has a short sound.</td>
</tr>
<tr>
<td>(29)</td>
<td>When a word ends in CK, it has the same sound as in look.</td>
</tr>
<tr>
<td>(8)</td>
<td>Words having double E usually have the long E sound.</td>
</tr>
<tr>
<td>(20)</td>
<td>When C and H are next to each other, they make only one sound.</td>
</tr>
<tr>
<td>(5)</td>
<td>The R gives the preceding vowel a sound that is neither long nor short.</td>
</tr>
</tbody>
</table>
Bailey indicates that the major purpose of her study was to:

...investigate the utility of phonic generalizations in reading instruction through application of recommended generalizations to a list of words representative of words encountered in reading in grades one through six. (4:413, 414)

Dr. Bailey utilized the forty-five phonic generalizations identified by Theodore Clymer (17) in an earlier study for her investigation. She proceeded to study the total vocabularies from eight basal reader series in grades one through six. The only limitations observed were that the words had to appear in two or more of the eight basal reader series, and that foreign words, proper names and place names were eliminated. The final composite list included 5,773 terms.

The identification of terms in the composite list to which each generalization could be applied was accomplished by computers.

In order to identify words conforming to a generalization and exceptions to the generalization Bailey used the 1961 edition of Webster's New Collegiate Dictionary as the pronunciation authority. The percent of utility was determined by dividing the total number of words conforming to a specific generalization by the total number of terms to which the generalization could be applied.

Bailey's recommendations most pertinent to this investigation are:
The findings of this study emphasize the need for the supplementation of future research to establish the value of phonic generalizations in reading in the elementary grades.

Research designed to establish scientifically-evolved criteria for judging the usefulness of phonic generalizations should be undertaken.

The ability of elementary school children to apply phonic generalizations in reading has not been considered in this or any previous investigation known to this writer. Future research, conducted through classroom experimentation, should contribute toward a better understanding of the usefulness of phonic generalizations to children. (4:417, 418)

Bailey's research resulted in findings supportive of Clymer's (17) efforts and confirmed the eight phonic generalizations selected for this investigation as having a high degree of utility in vocabularies for grades one through six. (4)

An investigation by Robert Emans (26) also utilized the procedures and generalizations originated by Theodore Clymer (17) in his study of forty-five phonic generalizations. This involved the identification of vocabulary, and the determination of the applicability of the generalization to various terms. The author, Emans, used The Teacher's Word Book of 30,000 Words by Thorndike-Lorge as the vocabulary source from which he selected a random sample of 10 percent of the words (1,944 words) beyond the primary level.
Webster's *New Collegiate Dictionary* was used to check spelling, phonetic respelling, and the syllabic division of words.

Clymer's (17) criteria regarding a reasonable degree of application was adhered to in this study which required a 75 percent utility for each generalization.

Emans extended this study to include the concept of secondary generalizations which a student might apply if the major generalization failed to resolve the pronunciation difficulty. Thus, a generalization may be attempted which is applicable only to exceptions.

A summary of findings relative to the present study are listed below:

Mr. Clymer found eighteen generalizations meeting the criteria in his study of words within the primary level; this study found sixteen. Although thirteen generalizations demonstrated their usefulness in both studies, four and possibly five, of those which proved useful on the primary level failed in usefulness for words beyond the primary level; and conversely, three of those generalizations which were judged not useful at the primary level were judged useful for words beyond the primary level. Therefore, different generalizations may need to be learned at different levels of schooling.

The percentage of utility used as a criterion may be too high. Possibly 50, 25, or an even lower percentage of utility would be better than no aid at all. A better criterion may be the total number of words in which a generalization functions rather than the percentage of utility.
This investigation has left unstudied the problem of which generalizations should be taught. While some rules may be so complicated that children have difficulty in applying them, other rules may be so obvious that children learn them without explicit guidance. Future studies need to be conducted to develop procedures for teaching generalizations and to try the procedures under controlled experimental conditions. (26:423, 424, 425)

Emans' research determined that certain generalizations possessed lower levels of utility for vocabularies beyond the primary grades. His study also served to reinforce Clymer's findings (17) with regard to the eight phonic generalizations selected for this present investigation. Emans found these eight generalizations to have at least a seventy-five percent level of utility in vocabularies above the primary grades. (26)

Literature Related to Inductive-Deductive Methodology and Phonic Instruction

The inductive approach in teaching phonic elements and principles appears to be routinely recommended in the literature by major authors as the accepted instructional procedure one should utilize when presenting phonic elements. (52:290-291, 299)

David H. Russell indicates that, (50:310) "Since phonics is a series of generalizations about words, the teacher will teach inductively."

Also in support of the inductive approach, Donald Cleland
and Lorraine C. Morgan evolved this theory:

Because children learn better through the inductive process and self discovery, phonetic generalizations should also be taught as the need arises...

Because many teachers are unfamiliar with phonetic principles, a tool of reference must be supplied which includes valid, high phonetic generalizations the child may use as he seeks independence in unlocking the pronunciation of unfamiliar words. (8:5)

A study by Burmeister (11) utilized the inductive and deductive methods when instructing word analysis generalizations to groups of eighth and ninth grade disabled readers. One of Dr. Burmeister's purposes was:

...to determine the value - for eighth and ninth grade students who are of average mental ability but who are weak in word analysis - of learning these generalizations by the inductive and deductive approaches. (11:3)

Instructional plans were designed by Burmeister for a two-week period with one set of lesson plans following an inductive approach and the other a deductive approach.

Ten instructors were selected to present twelve word analysis generalizations to their intact classes. One class was taught inductively, a second class deductively, and a third class served as a control group. The control group received routine instruction normally presented to classes and was not taught the word analysis generalizations.

The concern of Burmeister in this study was in retention value and not in immediate test results. Therefore, in order to determine
the delayed retention ability of these groups, unannounced post-tests were administered from thirteen to twenty-one days after the treatment had been presented. The Gates Reading Vocabulary Test Form 2 was utilized as the testing instrument for both oral and silent tests.

According to Burmeister the results of her research indicate that:

...when the training period is short the inductive and deductive approaches as used in this experiment are equally effective in bringing about improvement in word analysis among eighth and ninth grade students. That is, improvement, when using the generalizations of the present study as the basic materials, is independent of the approaches as used in this study among eighth and ninth grade students. However, although differences are not statistically significant, upon comparing the total means of the groups, it appears that the deductive approach may be the better approach. (11:74)

Research and opinions in the reading literature are questionable as to which method, inductive or deductive, is the stronger approach when teaching phonic generalizations and which method has greater transfer-retention value after an interim of several weeks time.

Literature Related to Inductive-Deductive Methodology and Transfer-Retention Factors

Since this investigation is concerned with the inductive-deductive methodology and transfer-retention factors relative to these two approaches, it is important to explore inductive-deductive research reported in allied disciplines. Several studies pertinent
to the present investigation have been conducted which evaluate these approaches and their subsequent effect on transfer and retention.

In 1934, McConnell (43) compared the performance of two groups of second grade children; one taught via a discovery approach and the other section instructed by an authoritative rote memorization procedure. This study of seven months duration resulted in his discovery group of youngsters performing at a higher level and demonstrating a superiority on most tests of transfer. (43)

Katona (36) found that greater achievement was attained when students were presented instructive examples in planned succession. He concluded that "formulating the general principle in words is not indispensable for achieving applications." (36:88, 89)

Gertrude Hendrix (34) sought an answer to this question: "To what extent, if any, does the way in which one learns a generalization affect the probability of his recognizing a chance to use it? (34:197)

Utilizing a mathematical principle in her research, Hendrix determined that:

...the highest transfer effects were achieved in the group taught by the unverbalized awareness procedure...and the lowest transfer effects came from the group taught by the method in which the generalization was stated first, then illustrated, then applied to new problems. (34:198)

Bert Kersh (37) explored the independent discovery method as opposed to methods which utilized greater direction with his
college students and concluded:

The results of this experiment suggest that when the learner is forced to rely on his own cognitive capacities, it is more likely that he will become motivated to continue the learning process or to continue practicing the task after the learning period. Consequently, the learning becomes more permanent and is more effectively transferred than when the learner is not so motivated. (37:292)

Jack E. Kittell, (38) investigated the effects of varied amounts of direction to students on transfer and retention of principles.

In Kittell's experiment, (38) three groups of sixth-grade pupils were presented a different amount of direction during the discovery process. The experimental class receiving an Intermediate amount of direction learned and transferred as many or more principles than the other groups which received either more or less direction. After an interim of two weeks and four weeks subsequent to training, the group receiving an Intermediate amount of direction retained the learned principles at a higher level than the other two experimental sections. (38)

Kittell states:

Evidence from this experiment in conjunction with that of similar experiments indicates that furnishing learners with information in the form of underlying principles promotes transfer and retention of learned principles and may provide
the background enabling future discovery of new principles. (38:404)

Summary of Investigations

The phonics literature reveals few studies devoted to instructional methods pertaining to phonic generalizations at the second grade level.

The literature supports both the inductive and deductive approaches as aids to transfer and retention with research evidence providing positive arguments for each procedure.

Rationale

Since many basal reader teaching guides (30:7) recommend an inductive approach when teaching phonic elements it became of interest to this writer to explore the reading research in order to find evidence which would justify a commitment to either the inductive or deductive methodology. Due to the limited number of research studies in reading regarding the inductive-deductive approaches and the major position the inductive approach commands in phonic methodology, it was thought to be important by this writer to investigate both of these methods of teaching phonic generalizations to second grade children. Answers to these questions were sought in this research:

1. Is the inductive or deductive approach superior in teaching phonic generalizations to second grade children?
2. Is the inductive or deductive approach more effective in promoting retention ability after a three week interim?

3. Is the inductive or deductive approach more effective in promoting greater transfer of learning?

The present investigation is concerned with instructional procedures relative to phonic generalizations and endeavors to extend knowledge in this area. A function of this study is to further explore the efficiency of transfer and retention factors when applied to eight selected phonic generalizations by second grade children.
CHAPTER III

METHODOLOGY AND RELATED PROCEDURES

This study compared two methods of teaching phonic generalizations to second grade children: an inductive approach which presented examples to the learner enabling him to arrive at a generalization and subsequently apply the generalization versus a deductive approach that proceeded from a generalization to examples and finally to application of the generalization.

This study asked three basic questions: (1) Is the inductive or deductive approach more effective in teaching phonic generalizations to second grade children? (2) Is the inductive or deductive approach more effective in promoting retention ability after a three week interim? (3) Is the inductive or deductive approach more effective in promoting transfer of learning?

The Pilot Study

This investigation began with a pilot study involving three classes of second grade children in the Corvallis Public Schools. The study was initiated in November, 1967 and extended over an eight week period. Its participants included 69 second grade children and three classroom instructors.

The pilot study was conducted for purposes of evaluating
teaching lessons and materials, the informal measuring instrument associated with this research, techniques in testing children using the informal phonic test, and student reaction to these materials. Data from the pilot study served as a basis for the revision of certain aspects of the materials. Specifically, several vocabulary terms concerning student seatwork assignments were substituted for less challenging words and several pictorial representations were altered in order to clarify them.

Subjects

Three second grade classes in the Portland Public Schools, Portland, Oregon participated in this study concerning teaching methodology and phonic generalizations. Three classes of approximately twenty-five children each, were randomly assigned as units to experimental and control group status by this researcher. The three schools in which these classes were located were described as being in average socio-economic areas as determined by Portland Public School District criteria.

Preparation of Instructors

An individual orientation session was scheduled for each experimental group instructor after school in the afternoon. The purpose of this two hour session was to further explain and discuss
teaching procedures, note the distinction between inductive-deductive methodology, explore time allowances, and determine a consistent methodology to utilize when correcting independent seatwork assignments.

Prior to these two hour orientation sessions each instructor of an experimental group received a notebook which included a statement of the major purposes of the study, teaching lesson plans, and student independent seatwork lessons.

An orientation period of approximately one hour was scheduled for the control group instructor for purposes of arranging a satisfactory testing schedule. The control group instructor was not advised that this was a phonic study yet she knew that it involved reading. She was to present reading lessons (which would include phonic generalizations) in her usual fashion.

**Standardized Evaluative Instruments**

All children were administered the Kuhlmann-Anderson Test, Level 2, by this researcher to determine the students' performance level on a group intelligence test. The purpose of ascertaining I.Q. scores for these students was to establish the fact that they represented a population of average intelligence. The Kuhlmann-Anderson Test, Level 2, was administered to groups of second grade children comprised of no more than ten youngsters each. The
testing situation in all cases was devoid of distractions and judged generally satisfactory by this examiner. The results from this intelligence test indicated that these students achieved the clinical classification of average according to the technical manual of the Kuhlmann-Anderson Test, Level 2. Table 3 shows the performance level of these students.

Table 3. Kuhlmann-Anderson Mean Test Scores for the Three Second Grade Classes Included in this Study.

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group I (Class A)</th>
<th>Experimental Group II (Class B)</th>
<th>Control (Class C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>27</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>I.Q. Range</td>
<td>87-132</td>
<td>80-129</td>
<td>79-128</td>
</tr>
<tr>
<td>Mean I.Q.</td>
<td>107.44</td>
<td>103.96</td>
<td>109.83</td>
</tr>
</tbody>
</table>

The Gates MacGinitie Reading Test, Primary B, Form 1, Vocabulary was administered to all students by this writer prior to the initiation of any treatment procedures. The test manual indicated that second grade students should be achieving at a 2.5 level of functioning during the month of January. Table 4 showed that a slightly below average performance level when compared with national norms was achieved by the three classes of second grade students.
Table 4. Mean Scores on the Gates MacGinitie Reading Test, Primary B, Form 1, Vocabulary, for the Three Second Grade Classes Included in this Study.

<table>
<thead>
<tr>
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<th>Experimental Group I (Class A)</th>
<th>Experimental Group II (Class B)</th>
<th>Control (Class C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>27</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Range of Vocabulary Scores</td>
<td>1.3-5.0</td>
<td>1.3-5.0</td>
<td>1.3-5.0</td>
</tr>
<tr>
<td>Mean Vocabulary Scores</td>
<td>1.9</td>
<td>2.0</td>
<td>2.2</td>
</tr>
</tbody>
</table>

In order to determine a child's ability to analyze vocabulary terms, an Individual Informal Oral Phonic Generalization Test was constructed by this writer based on eight phonic generalizations stated by Clymer (17). The construction of the phonic instrument was based upon a survey of vocabulary terms found in seven basal reader series used in the Portland Public Schools developmental reading program. The writer deemed it essential to determine the frequency of occurrence of vocabulary terms to which these eight phonic generalizations could be applied. The frequency of occurrence would clarify the importance of these generalizations in terms of applicability to vocabulary. Therefore, a survey of vocabulary terms at each reading level, PP$^1$ through $2^2$, was accomplished for each of the seven basal reader series texts at the levels...
previously mentioned. The number of new vocabulary terms to which each of the eight phonic generalizations could be applied at the designated reading levels was tabulated and recorded. In addition, the percentage of words to which each generalization applied at the various reading levels was also calculated on the basis of data from this survey. (See Appendix A)

The tabulation of vocabulary terms from seven basal reader series revealed that the eight selected phonic generalizations for this study applied to 2,379 words out of a total of 5,377 different words. Thus, eight phonic generalizations applied to forty-four percent of the total number of different words taught in seven basal reader series at levels PP1 through 22, and were considered to be of sufficient importance to merit study at the second grade level.

Informal Evaluative Instrument

The Individual Informal Oral Phonic Generalization Test consisted of three test forms with each form containing sixteen vocabulary terms and sixteen nonsense terms. Since some of the students would know certain of the vocabulary terms used in the three phonics tests, nonsense terms were included as an additional measure of students' ability to apply the generalizations. Thus, each of the three phonic tests included thirty-two test items. The eight phonic elements used in this study were presented to students in two
vocabulary terms and two nonsense terms on each form of the test. Therefore, the students were provided an opportunity to pronounce each of the phonic elements a total of four times on every test form. (See Appendix B)

The three test forms of this test were designed to serve several functions. The pre-test, (Phonic I) was administered to determine pre-treatment knowledge of phonic elements and the ability to apply this knowledge. The immediate post-test (Phonic II) was utilized to measure the increment in learning or ability to apply phonic principles taught. The purpose of the final post-test (Phonic III) was to determine if students could retain knowledge of phonic generalizations and also transfer this knowledge to vocabulary and nonsense terms after an interim of three weeks.

The vocabulary terms used in all three phonic tests had not been previously taught to these students nor were they used as examples in any of the previous inductive or deductive lessons presented to them.

Each oral phonic generalization test was administered by the writer individually to all students included in the study. Phonic I (pre-test) was administered during the week prior to initiation of treatment in the experimental and control groups. Children were given the Phonic II (immediate post test) form of the test within three days after phonic instruction had been concluded. The Phonic
III (final post-test) was administered to students within three days following the conclusion of the interim period. Prior to the administration of the oral phonic tests the children were cautioned about the importance of not revealing any of the words on the test to their classmates. These terms were labeled as the "secret" words for the day. This action was taken to prevent contamination of data by subjects during the total testing period which extended from ninety to one hundred twenty minutes in one morning or afternoon testing session of a single day.

The testing procedures included an introductory statement regarding the purpose of the testing exercise and a sample vocabulary test of three terms presented to each subject. (See Appendix B) Each subject was then asked to pronounce the sixteen vocabulary terms on the test which were individually exposed by employing a small tachistoscopic device. The tachistoscopic device was a 3" X 5" card with a 3/8" X 2" opening fashioned in the center of it. This device assisted in focusing the students attention on a single term and excluded extraneous stimuli. The vocabulary and nonsense terms were printed in primary type and triple spaced for clarity.

Following the subject's pronunciation of sixteen vocabulary terms an introductory statement was read to the student explaining the purpose of the nonsense terms. The student was directed to
complete the sample exercise involving nonsense terms which also clarified the testing procedure. Following this, the test containing the sixteen nonsense terms was presented to the student.

A time limit of sixty seconds was permitted each student for analyzing a single term. However, no student found it necessary to use the sixty second time limit for all terms. The total individual testing time for each pupil ranged from one to six minutes.

Correct responses were identified by omission of any symbol and incorrect responses designated by a check mark after the term. Responses were phonetically recorded in cases of doubt and re-evaluated at a later time. Responses were scored correct when the phonic element under question was pronounced as it should be, even though other segments of the term might be incorrectly stated. The student may, for example, have pronounced the word as "back" when the correct term was black. Since the "ck" element was the one being tested and since it was pronounced correctly, the pupil received credit for the correct response. The total number of correct responses for vocabulary and nonsense terms was tabulated for each child and subsequently recorded on a master test recording form. (See Appendix B) Recording of errors and scoring procedures were identical for the three informal phonic tests. All recording of responses and assessment of errors was done by the writer. Testing procedures were identical for all three phonic tests and for
experimental and control groups.

**Methodology**

Three second grade classrooms participated in this study with classes A and B comprising the experimental groups and class C the control group. Classes A and B were taught eight phonic generalizations via an inductive and deductive approach by their own classroom teachers over a period of four weeks time. Experimental group I was taught four generalizations via the inductive approach (generalizations #22, #23, #28, #44) for two weeks and then four different generalizations by the deductive approach (generalizations #29, #8, #20, and #5) during the final two weeks. (See Table 5)

Experimental group II was taught four phonic generalizations via the inductive approach (generalizations #29, #8, #20, and #5) for two weeks and then four different generalizations by the deductive approach (generalizations #22, #23, #28, and #44) during the final two weeks. (See Table 6)

The combined test performances of experimental groups I and II on eight phonic generalizations taught inductively comprised the inductive methodology group. The combined test performances of experimental groups I and II on eight phonic generalizations taught deductively comprised the deductive methodology group.

The control group was directed to continue its regular program
Table 5. Sequence of Presentation of Eight Phonic Generalizations Used in Teaching Experimental Group I.

<table>
<thead>
<tr>
<th>Week</th>
<th>Instructional Method</th>
<th>Generalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>Inductive (#22)</td>
<td>When C is followed by E or I, the sound of S is likely to be heard. (Example: city)</td>
</tr>
<tr>
<td></td>
<td>Inductive (#23)</td>
<td>When C is followed by O or A, the sound of K is likely to be heard. (Example: coat)</td>
</tr>
<tr>
<td>Second</td>
<td>Inductive (#28)</td>
<td>When two of the same consonants are side by side only one is heard. (Example: yellow)</td>
</tr>
<tr>
<td></td>
<td>Inductive (#44)</td>
<td>When there is one E in a word that ends in a consonant, the E usually has a short sound. (Example: set)</td>
</tr>
<tr>
<td>Third</td>
<td>Deductive (#29)</td>
<td>When a word ends in CK, it has the same sound as in look. (Example: lock)</td>
</tr>
<tr>
<td></td>
<td>Deductive (#8)</td>
<td>Words having double E usually have the long E sound. (Example: seed)</td>
</tr>
<tr>
<td>Fourth</td>
<td>Deductive (#20)</td>
<td>When C and H are next to each other, they make only one sound. (Example: chair)</td>
</tr>
<tr>
<td></td>
<td>Deductive (#5)</td>
<td>The R gives the preceding vowel a sound that is neither long nor short. (Example: far)</td>
</tr>
</tbody>
</table>
Table 6. Sequence of Presentation of Eight Phonic Generalizations Used in Teaching Experimental Group II.

<table>
<thead>
<tr>
<th>Week</th>
<th>Instructional Method</th>
<th>Generalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>Inductive (#29)</td>
<td>When a word ends in CK, it has the same sound as in look.</td>
</tr>
<tr>
<td></td>
<td>Inductive (#8)</td>
<td>Words having double E usually have the long E sound.</td>
</tr>
<tr>
<td>Second</td>
<td>Inductive (#20)</td>
<td>When C and H are next to each other, they make only one sound.</td>
</tr>
<tr>
<td></td>
<td>Inductive (#5)</td>
<td>The R gives the preceding vowel a sound that is neither long nor short.</td>
</tr>
<tr>
<td>Third</td>
<td>Deductive (#22)</td>
<td>When C is followed by E or I, the sound of S is likely to be heard.</td>
</tr>
<tr>
<td></td>
<td>Deductive (#23)</td>
<td>When C is followed by O or A, the sound of K is likely to be heard.</td>
</tr>
<tr>
<td>Four</td>
<td>Deductive (#28)</td>
<td>When two of the same consonants are side by side only one is heard.</td>
</tr>
<tr>
<td></td>
<td>Deductive (#44)</td>
<td>When there is one E in a word that ends in a consonant, the E usually has a short sound.</td>
</tr>
</tbody>
</table>
of reading instruction as previously planned without any alteration. This, of course, included instruction involving phonic generalizations.

**Teaching Procedures**

Experimental groups I and II were taught eight phonic generalizations over a period of four weeks time using inductive-deductive lesson plans specifically designed for this experimentation. (See Appendix C) Each phonic generalization lesson was taught to the whole class during a thirty minute period. Presentation of the phonic generalizations to the whole class extended approximately ten minutes with the remaining twenty minutes devoted to an independently completed follow-up seatwork assignment. The independent follow-up seatwork lessons were devised to reinforce the classroom presentation. (See Appendix C)

The two experimental groups were taught two new phonic generalizations each week. An introductory lesson for the new phonic generalization was presented on Monday, with an accompanying individual independent seatwork assignment for the student. On Tuesday the instructor presented a review lesson of the same phonic generalization with an independent follow-up seatwork lesson for each child. A new phonic generalization was introduced on Wednesday with an accompanying seatwork assignment. On
Thursday the instructor presented a review lesson of this new generalization with an individual seatwork assignment for the student. A combination lesson of the two generalizations taught during the week was presented on Friday with a follow-up seatwork lesson.

Two phonic generalizations were presented each week over a period of four weeks. The experimental groups were taught a total of twenty phonic generalization lessons. In addition, each student in the experimental groups completed an individual seatwork assignment for each lesson that was designed specifically to reinforce the teaching presentation and learning experience of the child.

The twenty inductive and twenty deductive teaching lesson plans were prepared by this writer for use by the experimental classroom teachers. (See Appendix C) The teaching lesson plan dialogue exemplified a detailed inductive or deductive methodology. This lesson plan dialogue represented an essential procedure in this study and was necessary in teaching the phonic generalization. The inductive lesson plans presented several vocabulary examples and provided practice in applying the phonic principle to numerous terms before the principle was elicited from students.

The deductive lesson plans began with a statement of the rule or principle and then provided examples of terms to which the principle could be applied. The principle was then restated by a student at the conclusion of the deductive teaching lesson. The
students' individual independent seatwork assignment lessons were identical for both inductive-deductive methodologies. Thus, a student taught generalization #22 inductively and another student taught generalization #22 deductively received identical seatwork assignments for that generalization.

The experimental and control groups in this study received their reading instruction during the morning session each day. The instructors of experimental groups were advised to spend approximately ten minutes in presenting the phonic principle and allow twenty minutes for students to complete the assignment. During the twenty minute seatwork period the instructor would check pupils' errors and then have each student correct his own errors.

This researcher observed for a thirty minute time period the actual teaching by each teacher of one inductive phonic generalization lesson taught to experimental group I and one deductive phonic generalization taught to experimental group II. The control group was also observed during a general reading session for a period of thirty minutes.
CHAPTER IV

FINDINGS

This study reported the results of a three classroom experiment comparing two methods of instruction in teaching phonic generalizations to second grade youngsters. The two methods of instruction were the inductive and deductive approaches.

In comparing the inductive and deductive methods, the study sought answers to three basic questions: (1) Is the inductive or deductive approach more effective in teaching phonic generalizations to second grade children? (2) Is the inductive or deductive approach more effective in promoting retention ability after a three week interim? (3) Is the inductive or deductive approach more effective in promoting greater transfer of learning?

Description of Data to be Analyzed

To determine whether method alone constituted a significant variable when instructing second grade children to utilize phonic generalizations, the study analyzed the scores made by seventy-three second grade youngsters on three informal phonic generalization tests.

A vocabulary score, nonsense score, and a total score (combination of vocabulary and nonsense scores) from each of three
forms of the Individual Informal Phonic Generalization Test comprised the basic data to be analyzed in this study. Each student then provided eighteen phonic test scores resulting from the three phonic tests used in this study. A single phonic test consisted of thirty-two items, sixteen vocabulary and sixteen nonsense items. These test items were further divided in terms of methodology used when teaching the phonic generalizations. Thus, eight vocabulary and eight nonsense terms comprised one-half of the test for a single methodology either inductive or deductive. The combination test performances from both experimental groups on a single methodology provided the complete test scores on eight phonic generalizations. The inductive test performances from both experimental groups I and II were combined to form the inductive group test results. Experimental group I was taught generalizations #22, #23, #28, #44 inductively and tested on these four generalizations by using eight vocabulary and eight nonsense test terms. Experimental group II was taught generalizations #29, #8, #20 and #5 inductively and tested on these four generalizations using eight vocabulary and eight nonsense test terms. The inductive test performances from experimental groups I and II on the eight phonic generalizations were combined to form the total inductive performance. The combined inductive or deductive performances from both experimental groups on the phonic tests provided information on eight phonic generalizations.
These basic data were taken from two experimental classes taught by two different instructors.

The vocabulary and nonsense scores were analyzed separately. Nonsense terms were included because some of the children would have already known certain of the vocabulary terms. The evaluation of students' performances on nonsense terms provided the students with an opportunity to apply phonic generalization knowledge to totally unfamiliar terms. Performance by students on nonsense terms provided additional data on amount learned unbiased by the chance occurrence of prior knowledge of terms.

Evaluation of performance was based upon the vocabulary, nonsense and total mean scores from the three Individual Informal Phonic Generalization Tests. The results from these three phonic tests were referred to as measurements and were determined as follows: (1) Phonic I scores are a measure of pre-treatment knowledge of eight phonic generalizations, (2) Phonic II scores minus Phonic I scores are a measure of learning, (3) Phonic III scores minus Phonic II scores provide measures of retention and transfer of learning. A measure of pre-treatment knowledge of phonic generalizations was computed by determining the mean scores of students on Phonic I test for the inductive group, deductive group and the control group. A measure of learning was computed by subtracting Phonic I scores from Phonic II scores for the inductive,
deductive, and control groups. A measure of retention was determined by subtracting Phonic II scores from Phonic III scores for the inductive, deductive and control groups.

Analyses

The eighteen separate scores for vocabulary, nonsense, and total, on measurements Phonic I, Phonic II-I, and Phonic III-II will be referred to as observations in the subsequent description of data.

The following definitions of symbols are included to clarify the analyses:

1) $X_1$ and $X_2 = \text{inductive method and observations respectively from experimental groups I and II.}$

2) $Y_1$ and $Y_2 = \text{deductive method and observations respectively from experimental groups I and II.}$

3) Generalization Set (Generalizations #22, #23, #28, and #44)

4) Generalization Set (Generalizations #29, #8, #20, and #5)

The observations were reduced from two generalization sets to a single observation by taking the difference in sums from the two scores. Since the X and Y scores were correlated we reduced
them to a single score. This was accomplished in the following manner:

\[ d_1 = X_1 - Y_1 \quad d_1 = \text{Experimental group I} \]
\[ d_2 = X_2 - Y_2 \quad d_2 = \text{Experimental group II} \]
\[ T_3 = X_3 + Y_3 \quad T_3 = \text{Control group} \]

The means and variances were calculated for each of the nine combined observations involving the three measurements. The following definitions of symbols were included to clarify the analysis:

<table>
<thead>
<tr>
<th>Mean Symbols</th>
<th>Variance Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \bar{d}_1 )</td>
<td>( S^2_{d_1} )</td>
</tr>
<tr>
<td>( \bar{d}_2 )</td>
<td>( S^2_{d_2} )</td>
</tr>
<tr>
<td>( \bar{T}_3 )</td>
<td>( S^2_{T_3} )</td>
</tr>
</tbody>
</table>

**Number of Students**

\[ n_1 = 23 \text{ students in experimental group I} \]
\[ n_2 = 27 \text{ students in experimental group II} \]
\[ n_3 = 23 \text{ students in the control group} \]

The test statistic utilized in comparing the inductive and deductive methods was as follows:
The difference in performance in the inductive and deductive question sets was tabulated first using $d_1 = (X_1 - Y_1)$ for each student in experimental group I and the analogous formula $d_2 = (X_2 - Y_2)$ for each student in experimental group II. Then the differences in the sum of the means from the two question sets for inductive and deductive question types was computed by using the formula $(\bar{X}_1 + \bar{X}_2) - (\bar{Y}_1 + \bar{Y}_2)$. Notice that $(\bar{X}_1 + \bar{X}_2)$ equals the sum of the means of the two question sets for the inductive teaching method from experimental groups I and II. Also, $(\bar{Y}_1 + \bar{Y}_2)$ equals the sum of the means of the two question sets for the deductive teaching method from experimental groups I and II. These means are found in Tables 7, 8, and 9.
Table 7. Raw Score Means on Phonic I Oral Pre-Test for Experimental and Control Groups.

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Teaching Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inductive ($\bar{X}_1 + \bar{X}_2$)</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>9.749</td>
</tr>
<tr>
<td>Nonsense</td>
<td>8.037</td>
</tr>
<tr>
<td>Total</td>
<td>17.786</td>
</tr>
</tbody>
</table>

Table 8. Class Means on Learning Scores for Experimental and Control Groups (Learning Score Equals Phonic II Test Score Minus Phonic I Test Score).

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Teaching Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inductive ($\bar{X}_1 + \bar{X}_2$)</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>1.839</td>
</tr>
<tr>
<td>Nonsense</td>
<td>1.872</td>
</tr>
<tr>
<td>Total</td>
<td>3.711</td>
</tr>
</tbody>
</table>
Table 9. Class Means on Retention Score for Experimental and Control Groups (Retention Score Equals Phonic III Test Score Minus Phonic II Test Score).

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Inductive (\bar{X}_1 + \bar{X}_2)</th>
<th>Deductive (\bar{Y}_1 + \bar{Y}_2)</th>
<th>Control (\bar{T}_3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>.325</td>
<td>-.338</td>
<td>.478</td>
</tr>
<tr>
<td>Nonsense</td>
<td>.431</td>
<td>-.370</td>
<td>.130</td>
</tr>
<tr>
<td>Total</td>
<td>.756</td>
<td>-.708</td>
<td>.608</td>
</tr>
</tbody>
</table>

A comparison of the inductive and deductive teaching methods was accomplished by determining the difference in mean scores between the two teaching methods on three phonic tests. The three tests included Phonic I (Pre-test), Phonic II (Measure of Learning), Phonic III (Measure of Retention). Table 10 shows the difference of mean scores in three performance areas including vocabulary terms, nonsense terms, and a combination of the two scores forming a total score.

Table 10 shows that significant differences did not exist between the inductive and deductive groups on three phonic tests, Phonic I (Pre-test), Phonic II (Measure of Learning) and Phonic III (Measure of Retention).
Table 10. Comparison Between the Inductive and Deductive Teaching Methods.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Score</th>
<th>Difference of Mean Scores</th>
<th>Standard Error of Difference of Mean Scores</th>
<th>t Statistic *</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-TEST</td>
<td>Vocabulary</td>
<td>.059</td>
<td>.4290</td>
<td>.138</td>
</tr>
<tr>
<td></td>
<td>Nonsense</td>
<td>.570</td>
<td>.4648</td>
<td>1.217</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.629</td>
<td>.6487</td>
<td>.970</td>
</tr>
<tr>
<td>LEARNING</td>
<td>Vocabulary</td>
<td>-.260</td>
<td>.4523</td>
<td>-.576</td>
</tr>
<tr>
<td>(Phonic II)</td>
<td>Nonsense</td>
<td>-.534</td>
<td>.6276</td>
<td>-.851</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>-.795</td>
<td>.8904</td>
<td>-.893</td>
</tr>
<tr>
<td>RETENTION</td>
<td>Vocabulary</td>
<td>.663</td>
<td>.4439</td>
<td>1.494</td>
</tr>
<tr>
<td>(Phonic III)</td>
<td>Nonsense</td>
<td>.800</td>
<td>.5306</td>
<td>1.508</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1.463</td>
<td>.7333</td>
<td>1.996</td>
</tr>
</tbody>
</table>

* Tabular t value for the .05 significance level with 48 degrees of freedom = 2.00.

It can be concluded that improvement was made among the students in the inductive and deductive groups regardless of the two methods employed.

Comparison of the Inductive and Control Group Methods

The test performances of the inductive and control groups were compared using the three phonic instruments. The test statistic utilized for comparing the inductive group method and the control group method was the following:

\[
t = \frac{(\bar{X}_1 + \bar{X}_2) - (\bar{T}_3)}{\sqrt{\frac{S^2}{p} \left( \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3} \right)}}
\]

with \( n_1 + n_2 + n_3 - 3 \) degrees of freedom
where

\[ S_p^2 = \frac{(n_1 - 1) S_1^2 + (n_2 - 1) S_2^2 + (n_3 - 1) S_3^2}{n_1 + n_2 + n_3 - 3} \]

Definition of Symbols:

- \( S_1^2 \) = variance of \( X_1 \)
- \( S_2^2 \) = variance of \( X_2 \)
- \( S_3^2 \) = variance of \( T_3 \)

When comparing the inductive and control group approaches in teaching eight phonic generalizations to second grade youngsters, the difference in mean scores between the two teaching methods was determined on the basis of scores from three phonic tests. Table 11 indicates the difference between the mean scores of the two groups in three performance areas specifically vocabulary terms, nonsense terms and the combined total score.

Comparison between the inductive and control group methods using the \( t \) test statistic showed that there were no significant differences between the vocabulary, nonsense, and total score means on Phonic I (Pre-test), Phonic II (Measure of Learning) and Phonic III (Measure of Retention).
### Table 11. Comparison Between the Inductive and Control Teaching Methods.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Score</th>
<th>Difference of Mean Scores Inductive minus Control</th>
<th>Standard Error of Difference of Mean Scores</th>
<th>t Statistic *</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-TEST</td>
<td>Vocabulary</td>
<td>-1.338</td>
<td>1.149</td>
<td>-1.164</td>
</tr>
<tr>
<td>(Phonic I)</td>
<td>Nonsense</td>
<td>- .789</td>
<td>1.240</td>
<td>- .636</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>-2.127</td>
<td>2.278</td>
<td>- .934</td>
</tr>
<tr>
<td>LEARNING</td>
<td>Vocabulary</td>
<td>.925</td>
<td>.716</td>
<td>1.290</td>
</tr>
<tr>
<td>(Phonic II)</td>
<td>Nonsense</td>
<td>1.351</td>
<td>.898</td>
<td>1.503</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.276</td>
<td>1.340</td>
<td>1.698</td>
</tr>
<tr>
<td>RETENTION</td>
<td>Vocabulary</td>
<td>- .153</td>
<td>.439</td>
<td>- .348</td>
</tr>
<tr>
<td>(Phonic III)</td>
<td>Nonsense</td>
<td>.299</td>
<td>.608</td>
<td>.493</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>.146</td>
<td>.747</td>
<td>.196</td>
</tr>
</tbody>
</table>

* Tabular t value for the .05 significance level with 70 degrees of freedom = 1.98.

A significant difference did not exist between the vocabulary, nonsense, and total mean scores when comparing the inductive and control group teaching methods on three phonic tests. Students learn equally well when comparing the inductive and control group methods.

**Comparison of the Deductive and Control Group Methods**

The test statistic utilized for comparing the deductive and the control group method was the following:

\[
t = \frac{(\bar{Y}_1 + \bar{Y}_2) - (\bar{T}_3)}{\sqrt{\frac{S^2}{p} \left( \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3} \right)}}
\]
with \( n_1 + n_2 + n_3 - 3 \) degrees of freedom

\[
S^2_p = \frac{(n_1 - 1) S^2_1 + (n_2 - 1) S^2_2 + (n_3 - 1) S^2_3}{n_1 + n_2 + n_3 - 3}
\]

Definitions of Symbols:

\( S^2_1 = \) variance of \( Y_1 \)
\( S^2_2 = \) variance of \( Y_2 \)
\( S^2_3 = \) variance of \( T_3 \)

A comparison of the deductive and control group approaches was accomplished by computing the difference in mean scores between the two teaching methods on three phonic tests. Table 12 shows the differences of mean scores attained by students in the deductive and control groups based on three phonic tests.

Comparison between the deductive and control methods on Phonic I tests indicated no significant differences on vocabulary, nonsense and total mean scores. The test performances on Phonic II showed a difference significant at the .05 level on the nonsense and total mean scores favoring the deductive group. The vocabulary score for the deductive group was not significantly better than that of the control group.

When comparing the deductive and control group methods on
Phonic III (Measure of Retention) the results indicated no significant differences existed between the two groups on vocabulary, nonsense, and total mean scores.

Table 12. Comparison Between Deductive and Control Teaching Methods.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Score</th>
<th>Difference of Mean Scores, Deductive minus Control</th>
<th>Standard Error of Difference of Mean Scores</th>
<th>t Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-TEST</td>
<td>Vocabulary</td>
<td>-1.397</td>
<td>1.253</td>
<td>-1.115</td>
</tr>
<tr>
<td>(Phonic I)</td>
<td>Nonsense</td>
<td>-1.359</td>
<td>1.220</td>
<td>-1.114</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>-2.756</td>
<td>2.353</td>
<td>-1.172</td>
</tr>
<tr>
<td>LEARNING</td>
<td>Vocabulary</td>
<td>1.186</td>
<td>.703</td>
<td>1.688</td>
</tr>
<tr>
<td>(Phonic II)</td>
<td>Nonsense</td>
<td>1.885</td>
<td>.778</td>
<td>2.422*</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3.072</td>
<td>1.323</td>
<td>2.321*</td>
</tr>
<tr>
<td>RETENTION</td>
<td>Vocabulary</td>
<td>- .816</td>
<td>.457</td>
<td>-1.784</td>
</tr>
<tr>
<td>(Phonic III)</td>
<td>Nonsense</td>
<td>- .500</td>
<td>.690</td>
<td>-.726</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>-1.317</td>
<td>.894</td>
<td>-1.473</td>
</tr>
</tbody>
</table>

* Tabular t value for the .05 significance level with 70 degrees of freedom = 1.98.

In summary then, this study revealed that those students taught phonic principles deductively achieved a significantly higher score in terms of amount learned (Phonic II tests) than did those students taught via the control group method.

Summary of Findings

The data from three phonic tests collected from three classrooms comparing the inductive and deductive methods of instruction were analyzed using a t test statistic. The combined mean scores from both inductive and deductive groups and the mean score from
the control group comprised the basic data on eight phonic generalizations.

The _t_ test statistic comparing the difference in means of the inductive and deductive methods indicated that significant differences did not exist between the inductive and deductive groups on the three phonic tests, Phonic I (Pre-Test), Phonic II (Measure of Learning), and Phonic III (Measure of Retention).

The _t_ test statistic used in comparing the inductive and control methods showed that there were no significant differences between the vocabulary, nonsense and total score means on Phonic I (Pre-Test), Phonic II (Measure of Learning) and Phonic III (Measure of Retention).

A comparison between the deductive and control methods on Phonic I tests showed no significant differences on vocabulary, nonsense, and total mean scores. Test performances on Phonic II (Measure of Learning) indicated a difference significant at the .05 level on the nonsense and total mean scores favoring the deductive group. The mean vocabulary score on Phonic II indicated no significant differences between the deductive and control groups.

In comparing the deductive and control group methods on Phonic III (Measure of Retention) the results showed no significant differences between the deductive and control groups in terms of retention.
CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to answer three basic questions:

1. Is the inductive or deductive approach more effective in teaching phonic generalizations to second grade children? (2) Is the inductive or deductive approach more effective in promoting retention ability after a three week interim? (3) Is the inductive or deductive approach more effective in promoting greater transfer of learning?

The investigation began with a pilot study involving three classes of second grade children in the Corvallis Public Schools. The pilot study was conducted for purposes of improving teaching lesson plans, student independent seatwork, and the informal phonic testing instrument associated with this research.

Following the completion of the pilot study and revision of materials, the experiment itself took place. Three second grade classes in the Portland Public Schools participated in this study concerning the inductive and deductive teaching methodologies and phonic generalizations. The three second grade classes of approximately twenty-five children each were randomly assigned to experimental
and control groups by this researcher. Experimental groups I and II were taught four generalizations inductively and then four different generalizations deductively. The control group was directed to continue its regular program of reading instruction without alterations during this time. The combined test performances of experimental groups I and II on eight phonic generalizations taught inductively comprised the inductive methodology group. The combined test performances of experimental groups I and II on eight phonic generalizations taught deductively comprised the deductive methodology group.

In determining whether method alone constituted a significant variable when instructing second grade children to utilize phonic generalizations, the study analyzed the mean scores made by seventy-three second grade youngsters on three informal phonic generalization tests. Mean vocabulary scores, nonsense scores, and total scores (combination of vocabulary and nonsense scores) from each of the three forms of the Individual Informal Phonic Generalization Test comprised the basic data to be analyzed in this study.

Findings

The question as to whether the inductive or deductive approach is more effective in teaching second grade children was investigated by comparing the test performances of students on a measure of
learning test (Phonic II) after a four week instructional period. The inductive and deductive group test performances were individually compared with a control group in order to determine if differences existed between the two groups. The t-test statistic used in comparing the total mean scores of the inductive and deductive groups on the immediate post-test measure of learning (Phonic II) showed that significant differences did not exist between the two methodologies.

When comparing the inductive and control group methods on Phonic II (Measure of Learning), the results showed no significant differences between the inductive and deductive groups.

A comparison of the deductive and control group methods on Phonic II (Measure of Learning) resulted in differences significant at the .05 level on total mean scores and nonsense subscores favoring the deductive group. When comparing the deductive and control groups in terms of total mean vocabulary scores on Phonic II the results indicated no significant difference.

To answer the question of whether the inductive or deductive approach is more effective in promoting retention ability after a three week interim the total mean scores of the inductive and deductive groups on a phonic test of retention (Phonic III) were compared. The Phonic III (Test of Retention) indicated no significant differences between the inductive and deductive methodologies in terms of
retention.

When comparing the vocabulary, nonsense and total mean scores for the inductive and control group methods on Phonic III (Measure of Retention) the results showed no significant differences between the two groups.

A comparison of the vocabulary, nonsense and total mean scores for the deductive and control group methods on Phonic III tests showed that the two methods were not significantly different in terms of retention.

The question of transfer of learning was investigated by noting performance differences on total mean scores for the experimental and control groups on Phonic Test III (Measure of Retention). A measure of transfer of learning was obtained by determining students' ability on Phonic test III (Measure of Retention) to apply phonic knowledge to vocabulary and nonsense terms which had been taught inductively, deductively, and via a control group approach.

The total mean scores on Phonic III revealed that the inductive group did not perform significantly better than the deductive group at the .05 level when comparing these two methods.

When comparing the inductive and control groups on Phonic III the results showed that no significant differences existed between the groups. A comparison of the deductive and control groups on Phonic III test also revealed that significant differences did not
exist between the deductive and control group methods.

Conclusions

When comparing the inductive and deductive methods in terms of immediate learning the findings show no differences. Thus, students appear to learn independent of method employed when comparing inductive and deductive approaches in teaching phonic generalizations to second grade children.

The inductive group was not superior to the control group in terms of immediate learning following the four week instructional period. However, test performances indicate that the deductive group was superior to the control group at the .05 level when children were tested immediately following the instructional period.

The inductive group did not perform significantly better (.05 level) than the deductive group when comparing vocabulary, nonsense, and total mean scores for the two methods in terms of retention and transfer of learning. Thus, the inductive group did not retain and transfer the knowledge of phonic generalizations gained significantly better than the deductive group.

When comparing the inductive-deductive approaches with the control group in terms of retention and transfer of learning differences in performance were not significant.
Implications for Teaching

Method alone as exemplified in this study did not appear to be a significant factor in teaching second grade children eight phonic generalizations. Children appeared to learn phonic generalizations independent of the method used by the instructor, therefore, in terms of the limitations of this study, the inductive and deductive approaches appear to be equally effective when teaching new concepts. The ability to retain phonic generalization knowledge and subsequently transfer this learning to new situations was not significantly influenced by method in this study. Regardless of whether we teach by the inductive or deductive method then, new concepts will be learned with a similar degree of efficiency.

It appears prudent to alert teachers to the fact that students need practice in applying knowledge of certain phonic elements which have been placed in a variety of positions.

Limitations

1. The small sample size is restrictive in terms of making broad generalizations applicable to a larger group.

2. The length of teaching time in this study may have been too short to be conclusive for second grade children with regard to learning new concepts.
Recommendations for Further Research

1. Increasing the number of participating students in a similar study which compares the inductive and deductive approaches would provide an opportunity for random sampling thus improving generalizability of results.

2. Conducting a similar study with students from disadvantaged areas might yield quite different results due to varying factors of socio-economic levels, family stability, physical well-being, educational goals.

3. Variations in terms of length of inductive or deductive instructional time might provide additional information with regard to amount learned, retention and transferability.

4. Transfer of learning could be further explored by testing students' ability to apply phonic generalization knowledge at spaced intervals of four weeks over a period of possibly six months.

5. It would be interesting to have this study replicated by several different teachers in various socio-economic areas to determine if variations would occur in terms of inductive-deductive methodology.
BIBLIOGRAPHY


4. __________ The utility of phonic generalizations in grades one through six. The Reading Teacher 20:413-418. 1967.


33. __________. Principles and practices of teaching reading. 2d ed. Columbus, Charles E. Merrill, 1967. 562p.


APPENDICES
APPENDIX A

Summary Sheet of Vocabulary Terms from Seven Basal Reader Series Including only Those Terms From Levels PP¹ Through Level 2².
### SUMMARY SHEET OF VOCABULARY TERMS FROM SEVEN BASAL READER SERIES INCLUDING THOSE TERMS FROM LEVEL PP¹ THROUGH LEVEL 2²

<table>
<thead>
<tr>
<th>Basal Reader Series</th>
<th>A*</th>
<th>E*</th>
<th>C*</th>
<th>D*</th>
<th>E*</th>
<th>F*</th>
<th>G*</th>
<th>H*</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>#8</td>
<td>#22</td>
<td>#23</td>
<td>#28</td>
<td>#29</td>
<td>#44</td>
<td>#20</td>
<td>#5</td>
</tr>
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<td>1) Scott Foresman 1962</td>
<td>Total Words (882)</td>
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<td>48</td>
<td>155</td>
<td>16</td>
<td>39</td>
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<tr>
<td></td>
<td>% of Words in this Series to Which Generalization Applies</td>
<td>4%</td>
<td>2%</td>
<td>5%</td>
<td>17%</td>
<td>2%</td>
<td>4%</td>
<td>3%</td>
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<tr>
<td>2) Allyn &amp; Bacon 1957</td>
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<td>33</td>
<td>78</td>
<td>11</td>
<td>38</td>
<td>19</td>
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<td></td>
<td>% of Words in this Series to Which Generalization Applies</td>
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<td>3%</td>
<td>4%</td>
<td>10%</td>
<td>1%</td>
<td>5%</td>
<td>3%</td>
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<tr>
<td>3) Ginn 1961</td>
<td>Total Words (775)</td>
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<td>105</td>
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<tr>
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<td>11%</td>
<td>2%</td>
<td>4%</td>
<td>2%</td>
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<tr>
<td>5) Lyons &amp; Carnahan 1962</td>
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<td>1%</td>
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<td>12%</td>
<td>2%</td>
<td>4%</td>
<td>3%</td>
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<tr>
<td>6) Houghton Mifflin 1957</td>
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Continued
SUMMARY SHEET Continued.

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<thead>
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<th>B*</th>
<th>C*</th>
<th>D*</th>
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<th>F*</th>
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<th>H*</th>
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</thead>
<tbody>
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<td>#22</td>
<td>#23</td>
<td>#28</td>
<td>#29</td>
<td>#44</td>
<td>#20</td>
<td>#5</td>
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</table>

7) American Book 1963

<table>
<thead>
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<th>Total Words (719)</th>
<th>Total Words</th>
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<th>12</th>
<th>23</th>
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<th>7</th>
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<th>112</th>
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</thead>
<tbody>
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<td>2%</td>
<td>3%</td>
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<td>1%</td>
<td>5%</td>
<td>2%</td>
<td>16%</td>
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</tbody>
</table>

<table>
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<tr>
<th>Total Words-7 Series: 5377</th>
<th>Total Cum. Words for Each Generalization</th>
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<th>113</th>
<th>242</th>
<th>653</th>
<th>77</th>
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<td>2%</td>
<td>4%</td>
<td>11%</td>
<td>1%</td>
<td>4%</td>
<td>2%</td>
<td>15%</td>
<td></td>
</tr>
</tbody>
</table>

* A. Words having double E usually have the long E sound.
B. When C is followed by E or I, the sound of S is likely to be heard.
C. When C is followed by O or A, the sound of K is likely to be heard.
D. When two of the same consonants are side by side only one is heard.
E. When a word ends in CK, it has the same sound as in look.
F. When there is one E in a word that ends in a consonant, the E usually has a short sound.
G. When C and H are next to each other, they make only one sound.
H. The R gives the preceding vowel a sound that is neither long nor short.

Note: These eight phonic generalizations applied to 2,378 words out of a total of 5,377 different words from seven basal reader series. These phonic generalizations apply to 44% of the total number of words.
APPENDIX B

1. The Individual Informal Oral Phonic Generalization Test, Directions.

2. The Individual Informal Oral Phonic Generalization Test, Test Form.

3. The Individual Informal Oral Phonic Generalization Test, Record Forms.
Directions - Oral Phonic Test

"Good Morning ___________. How are you today? I'd like you to read some words for me now. I'm going to show you one word at a time like this." Have child read sample words. "Can you say this word?" Then say: "Now I am going to ask you to read some more words."

"These words are not real words. They can be read like real words because they are made of parts of real words. Here's a made-up word (expose example saf). From what you know about real words, can you say this one?" Then say: "Now would you read these made-up words?"
Example Words

1) dog
2) me
3) want

1) scf
2) kes
### Britton - Individual Informal Oral Phonic Generalization Test

#### Form I: Pre-Test

<table>
<thead>
<tr>
<th>Vocabulary Terms</th>
<th>Nonsense Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) nice</td>
<td>1) tice</td>
</tr>
<tr>
<td>2) space</td>
<td>2) smace</td>
</tr>
<tr>
<td>3) color</td>
<td>3) cos</td>
</tr>
<tr>
<td>4) cage</td>
<td>4) caft</td>
</tr>
<tr>
<td>5) letter</td>
<td>5) metter</td>
</tr>
<tr>
<td>6) hurry</td>
<td>6) burry</td>
</tr>
<tr>
<td>7) rest</td>
<td>7) hest</td>
</tr>
<tr>
<td>8) sent</td>
<td>8) fent</td>
</tr>
<tr>
<td>9) pick</td>
<td>9) dock</td>
</tr>
<tr>
<td>10) block</td>
<td>10) spock</td>
</tr>
<tr>
<td>11) seed</td>
<td>11) meed</td>
</tr>
<tr>
<td>12) free</td>
<td>12) pree</td>
</tr>
<tr>
<td>13) lunch</td>
<td>13) fech</td>
</tr>
<tr>
<td>14) chair</td>
<td>14) chom</td>
</tr>
<tr>
<td>15) winter</td>
<td>15) menter</td>
</tr>
<tr>
<td>16) farm</td>
<td>16) sarn</td>
</tr>
<tr>
<td>Vocabulary Terms</td>
<td>Nonsense Terms</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>1) dance</td>
<td>1) fance</td>
</tr>
<tr>
<td>2) race</td>
<td>2) kace</td>
</tr>
<tr>
<td>3) cold</td>
<td>3) corf</td>
</tr>
<tr>
<td>4) camp</td>
<td>4) cam</td>
</tr>
<tr>
<td>5) butter</td>
<td>5) sutter</td>
</tr>
<tr>
<td>6) carry</td>
<td>6) turry</td>
</tr>
<tr>
<td>7) test</td>
<td>7) fest</td>
</tr>
<tr>
<td>8) held</td>
<td>8) feld</td>
</tr>
<tr>
<td>9) sick</td>
<td>9) nack</td>
</tr>
<tr>
<td>10) stack</td>
<td>10) spack</td>
</tr>
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<td>11) need</td>
<td>11) keed</td>
</tr>
<tr>
<td>12) sleep</td>
<td>12) treep</td>
</tr>
<tr>
<td>13) much</td>
<td>13) mech</td>
</tr>
<tr>
<td>14) children</td>
<td>14) chan</td>
</tr>
<tr>
<td>15) water</td>
<td>15) meder</td>
</tr>
<tr>
<td>16) arm</td>
<td>16) tarm</td>
</tr>
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</table>
**Britton - Individual Informal Oral Phonemic Generalization Test**

**Form III  Delayed Post-Test**

<table>
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<td>1) pice</td>
</tr>
<tr>
<td>2) place</td>
<td>2) stace</td>
</tr>
<tr>
<td>3) corner</td>
<td>3) cof</td>
</tr>
<tr>
<td>4) care</td>
<td>4) calp</td>
</tr>
<tr>
<td>5) better</td>
<td>5) ketter</td>
</tr>
<tr>
<td>6) sorry</td>
<td>6) murry</td>
</tr>
<tr>
<td>7) best</td>
<td>7) kest</td>
</tr>
<tr>
<td>8) send</td>
<td>8) hend</td>
</tr>
<tr>
<td>9) kick</td>
<td>9) bick</td>
</tr>
<tr>
<td>10) thick</td>
<td>10) smick</td>
</tr>
<tr>
<td>11) feed</td>
<td>11) leed</td>
</tr>
<tr>
<td>12) green</td>
<td>12) sneed</td>
</tr>
<tr>
<td>13) each</td>
<td>13) sech</td>
</tr>
<tr>
<td>14) chase</td>
<td>14) chad</td>
</tr>
<tr>
<td>15) wonder</td>
<td>15) mander</td>
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<tr>
<td>16) barn</td>
<td>16) torn</td>
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</table>
## RECORD FORM —-INDIVIDUAL INFORMAL ORAL PHONIC GENERALIZATION TEST

GROUP (EXP. I  EXP. II  CONTROL) STUDENT

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<th>FORM II</th>
<th>FORM III</th>
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<tbody>
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<td>1. dance</td>
<td>1. rice</td>
</tr>
<tr>
<td>2. space</td>
<td>2. race</td>
<td>2. place</td>
</tr>
<tr>
<td>3. color</td>
<td>3. cold</td>
<td>3. corner</td>
</tr>
<tr>
<td>4. cage</td>
<td>4. camp</td>
<td>4. care</td>
</tr>
<tr>
<td>5. letter</td>
<td>5. butter</td>
<td>5. better</td>
</tr>
<tr>
<td>6. hurry</td>
<td>6. carry</td>
<td>6. sorry</td>
</tr>
<tr>
<td>7. rest</td>
<td>7. test</td>
<td>7. best</td>
</tr>
<tr>
<td>8. sent</td>
<td>8. held</td>
<td>8. send</td>
</tr>
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<td>9. fance</td>
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<td>10. smace</td>
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<td>11. cos</td>
<td>11. cof</td>
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<td>12. caft</td>
<td>12. cam</td>
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<td>13. sutter</td>
<td>13. ketter</td>
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<tr>
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<td>15. fest</td>
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<td>16. feld</td>
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<td></td>
<td>Total _______</td>
</tr>
<tr>
<td>1. pick</td>
<td>1. sick</td>
<td>1. kick</td>
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<tr>
<td>2. block</td>
<td>2. stack</td>
<td>2. thick</td>
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<tr>
<td>3. seed</td>
<td>3. need</td>
<td>3. feed</td>
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<tr>
<td>4. free</td>
<td>4. sleep</td>
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<tr>
<td>5. lunch</td>
<td>5. much</td>
<td>5. each</td>
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<td>6. chair</td>
<td>6. children</td>
<td>6. chase</td>
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<td>7. winter</td>
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APPENDIX C

Sample Inductive and Deductive Teaching Lesson Plans.

Sample Student Individual Independent Seatwork Assignments.
Phonic Generalization #22
When C is followed by E or I, the sound of S is likely to be heard.

LESSON I

LESSON II

A) DIRECTIONS

Teacher lists specific examples containing the phonic element to be taught.

"Look at these words and listen as I pronounce them or say them out loud." (T. underlines each word with her hand as she pronounces the words. Then T. has the entire class read the words together.)

"Now look at these words again and see if you can find some way in which they are alike. Yes, they all have the same letter C in them. (T. circles C in each word.) We all remember that C has no sound of its own and therefore must borrow the sound of either the K or the S. (T. illustrates this by showing the following example: C → K)

"Could someone tell me the sound that the C has in each of these words. Yes, the S sound is correct, that is the sound we hear."

"There is a way to help you remember which sound to give the C by looking at the letter following the C. Let's look at these words and see if you can find out what it is."

B) Teacher lists additional examples containing the phonic element to be taught. (List and present one word at a time.)

"Who can read the first word? Good. (T. or student then draws a circle around the letter C.) What letter follows the C? That's right E or I. (T. draws arrow pointing at the E or I.)"

"What sound does the C have? That's right an S sound. (T. writes the letter S above the C in the word.) Who can tell me this word again?"

Continue presenting each example using the dialogue in section B until T. judgment determines that students can apply generalization and are now ready to formulate the generalization or rule. "Now who can think of a rule that we should follow when sounding out a word that has a C in it followed by E or I?"

RULE: When C is followed by E or I, the sound of S is likely to be heard.
**Phonics Generalization #23**

When C is followed by O or A, the sound of K is likely to be heard.

### LESSON I

<table>
<thead>
<tr>
<th>AKE</th>
<th>OLR</th>
<th>ATCH</th>
<th>ANN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAKE</td>
<td>COLOR</td>
<td>CACTUS</td>
<td>COW</td>
</tr>
</tbody>
</table>

### LESSON II

#### A) DIRECTIONS

Teacher lists specific examples containing the phonetic element to be taught.

"Look at these words and listen as I pronounce them or say them out loud." (T. underlines each word with her hand as she pronounces the words. Then T. has the entire class read the words together.)

"Now look at these words again and see if you can find some way in which they are alike. Yes, they all have the same letter C in them. (T. circles C in each word. We all remember that C has no sound of its own and therefore must borrow the sound of either the K or the S.) (T. illustrates this by showing the following example: C→K.)

"Could someone tell me the sound that the C has in each of these words? Yes, the K sound is correct, that is the sound we hear."

"Did you know that there is a way to help you remember which sound to give the C by looking at the letter following the C. Let's look at these words and see if you can find out what it is."

#### B) Teacher lists additional examples containing the phonetic element to be taught. (List and present one word at a time.)

"Who can read the first word? Good. (T. or student then draws a circle around the letter C.) What letter follows the C? That's right O or A. (T. draws arrow pointing toward the O or A.)

"What sound does the C have? That's right a K sound." (T. writes the letter K above the C in the word.)

Continue presenting each example using the dialogue in section B until T. judgment indicates that students are ready to formulate the generalization or rule.

"Now who can think of a rule that we should follow when sounding out a word that has a C in it followed by O or A?"

**RULE:** When C is followed by O or A, the sound of K is likely to be heard.
Phonic Generalization #22
When C is followed by E or I, the sound of $S$ is likely to be heard.

Phonic Generalization #23
When C is followed by O or A the sound of $K$ is likely to be heard.

A) DIRECTIONS

"Today we are going to be doing some seatwork which has the two kinds of $C$ words in it that we have been studying. Do you remember that the C has no sound of its own and therefore must borrow the sound of either the K or the S. (T. illustrates this by showing the following example:"

$$c \rightarrow ^k \rightarrow ^s$$

(T. writes cake and cent on the board.)

"Look at these words. What sound does the C have in the word cake? That's right a K sound. (T. writes K above the C in cake.) What sound does the C have in the word cent? That's right, an S sound. (T. writes an S above the C in cent.)

DIRECTIONS #23

(Teacher writes the word call on the board.)

"Who can pronounce this word? Yes, the word is call. What letter comes after the letter C in this word? Yes, the letter A follows the letter C. (T. draws arrow to letter A.) Who know what sound the C has in this word? Yes, the K sound is correct. (T. writes the letter K above the C in call.) Who can name the word again. Yes, call is correct.

Follow the same dialogue using the word camp and additional words from lessons I or II if necessary. Continue presenting examples using the dialogue above until teacher judgment indicates that students can apply generalization and can recall the rule. What rule will help us remember which sound to give the letter C?

RULE: When C is followed by O or A, the sound of $K$ is likely to be heard.

B) DIRECTIONS #22

"Now let's look at some other words we have been studying (T. writes the word cellar on the board.) Who can pronounce this word? Yes, the word is cellar. What letter comes after the letter C in this word? Yes, the letter E follows the letter C. (T. draws arrow to letter E.) Who knows what sound the C has in this word? Yes, the S sound is correct. (T. writes S above C in cellar.) Follow the same dialogue using the word race and any additional words necessary from lessons I or II.

Continue presenting examples using the dialogue above until teacher judgment indicates that students recall the rule.

What rule will help us remember which sound to give the C?

Elicit from students: When C is followed by E or I, the sound of $S$ is likely to be heard.
A) DIRECTIONS

"Now we are going to learn how to sound out or pronounce certain words you will meet while reading. Here is a rule you can follow when you are reading and meet a word which has a C in it followed by E or I, like in the words city and nice.

Look at the word city. Notice that there is a C in the word (T circles C) followed by the letter I. Notice that there is a C in the word (T circles C) followed by the letter E. Now look at this rule:

When C is followed by E or I the sound of S is likely to be heard.

(T writes this generalization on the board or displays it.)

Let's look at some words which follow this rule."

B) Teacher lists additional examples containing the phonic element to be taught. List and discuss one example at a time.

"Who can read the first word? Good. Where is the C in this word? Yes, at the of the word. (T circles letter C.) What letter follows the C? Yes, __ follows the letter C in this word. (T draws arrow pointing to letter E or I.) Does the C have a K or an S sound in this word? Yes, an S sound is correct. (T writes the letter S above the C in the word.) Remember that the C has no sound of its own and therefore must borrow the sound of either the K or the S. (T illustrates this by showing the following example: C → K)

We know then, that when the C is followed by E or I, the C takes the sound of S. Now let's see if this word ______ follows the rule. (T has child read this rule.)

RULE: When C is followed by E or I, the sound of S is likely to be heard.

Is the letter C followed by E or I in this word? Yes, the C is followed by the letter __. What sound does the C have? That's correct the C takes the sound of S. Who can read this word again? Does this word follow the rule? Yes."

Continue presenting examples using the dialogue in section B until majority of children are able to apply the generalization in analyzing a new word.
DEDUCTIVE TEACHING LESSON PLAN

LESSON I

A K E

C O L O R

A T C H

K A R

K O M E

D E T

A R T

LESSON II

A D D I T I O N S

C A K E

C O L O R

C A T T U S

K O W

C A N D L E

K O A T

K O T

C A M E R A

C A N D Y

C A R

DIRECTIONS

"Now we are going to learn how to sound out or pronounce certain words you will meet while reading.

Here is a rule you can follow when you are reading and meet a word which has a C in it followed by D or A, like in the words cake and color.

Look at the word cake. Notice that there is a C in the word (T, circles C) followed by the letter A. Look at the word color. Notice that there is a C in the word (T, circles C) followed by the letter O. Now look at this rule:

When C is followed by D or A, the sound of K is likely to be heard.

(T, writes this generalization on the board or displays it.)

Let's look at some words which follow this rule."

Teacher lists additional examples containing the phonic element to be taught. List and discuss one example at a time.

"Who can read the first word. Good. Where is the C in this word? Yes, at the beginning of the word. (T, circles letter C.) What letter follows the C? Yes, D or A follows the C in this word. (T, draws arrow pointing to D or A following C.)

Does the C have a K or an S sound in this word? Yes, a K sound is correct. (T, writes the letter K above the C in the word.)

Remember that the C has no sound of its own and therefore must borrow the sound of either the K or the S. (T, illustrates this by showing the following example: C K S)

We know then that when the C is followed by D or A the C takes the sound of K.

Now let's see if this word follows the rule.

RULE: When C is followed by D or A, the sound of K is likely to be heard.

Is the letter C followed by D or A in this word? Yes, C is followed by the letter A. What sound does the C have? That's correct the C takes the sound of K.

Does this word follow the rule? Yes.

Continue presenting examples using dialogue in section B until majority of children are able to apply the generalization in analyzing a new word."
Phonic Generalization #22
When C is followed by E or I the sound of S is likely to be heard.

A) DIRECTIONS

"Today we are going to be doing some seatwork which has the two kinds of C words in it that we have been studying. Do you remember that the C has no sound of its own and therefore must borrow the sound of either K or S."

(T. illustrates this by showing the example: C

(T. writes cake and cent on the board.) "Look at these words. What sound does the C have in the word cake? That's right a K sound. (T. writes K above the C in cake.) What sound does the C have in the word cent? That's right an S sound. (T. writes an S above the C in cent.)

DIRECTIONS #23

"Here is a rule you can follow when you are reading and meet a word which has a C in it followed by O or A, like in the words cold and camp. Look at the word cell. Notice that there is a C in the word followed by the letter E. (T. circles C.) Look at the word camp. Notice that there is a C in the word followed by the letter A. (T. circles C.) Now look at the rule.

RULE: When C is followed by O or A the sound of K is likely to be heard.

(T. writes or displays generalization on board.)

"Let's look at some words which follow this rule."

(T. lists examples containing the phonic element to be taught.)

Who can read the first word? (cot) Good. Where is the C in this word? Yes, at the beginning of the word. (T. circles letter C.) What letter follows the C? Yes, O or A follows the C in this word. (T. draws arrow pointing to O or A following C.) Does the C have a K or an S sound in this word? Yes, a K sound is correct. We know that when C is followed by O or A the C takes the sound of K.

Let's see if this word (cot) follows the rule. (T. reads rule.) Is the letter C followed by O or A in this word? Yes, C is followed by the letter O. What sound does the C have? That's correct the C takes the sound of K.

Does this word follow the rule? Yes, it does." Continue with above dialogue using additional words.

B) DIRECTIONS #22

"Now let's look at some other words we have been studying. Here is a rule you can follow when you are reading and meet a word which has a C in it followed by E or I, like in the words cellar and pencil. Look at the word cellar and notice that there is a C in the word followed by the letter E. Look at the word pencil. Notice that there is a C in the word followed by the letter I. (T. circles C.) Now look at this rule:

Phonic Generalization #23
When C is followed by O or A the sound of K is likely to be heard.
B) RULE: When C is followed by E or I, the sound of S is likely to be heard. (T. writes generalization on board or displays it.)

Let's look at some words which follow this rule.

Teacher lists additional examples containing the phonic element to be taught. List and discuss one example at a time.

Who can read the first word? Good. Where is the C in this word? Yes, at the beginning of the word. (T. circles letter C.) What letter follows the C? Yes, follows the letter C in this word. (T. draws arrow pointing to letter E or I.)

Does the C have a K or an S sound in this word? Yes, an S sound is correct. (T. writes the letter S above the C in the word.)

We know then, that when the C is followed by E or I, the C takes the sound of S.

Now let's see if this word cigar follows the rule. (T. has child read rule.)

Is the letter C followed by E or I in this word? Yes, the C is followed by the letter __. What sound does the C have? That's correct the C takes the sound of S. Who can read the word again. Does this word follow the rule? Yes.

Follow the same dialogue using additional words from lessons I and II if necessary.

Continue presenting examples until majority of children are able to apply the generalization in analyzing a new word.

Then present combination seatwork assignment.
When C is followed by or I, the sound of is likely to be ard.

set
city
ice
cent

fun
fast
face
nice

some
cent
pal
car

pan
price
princess
pass

fence
for
far
stop

Name
Say the name of the picture word to yourself. Then read the list of words. Underline the word that names the picture.

once
cigar
plane
city

penny
mince
pencil
ladder

mine
ride
mice
little

spin
one
wheels
spaceman
When C is followed by E or I, the sound of S is likely to be heard.

NAME

Look at the following word pictures. Notice that the C has the sound of S. Look at the letters which follow the C.

Read each sentence. Then read the three words below each sentence. Write the word that best completes the sentence on the line. Complete the sentence in the box first.

Mary saw a red pit nice pencil

1. Tom saw his grandfather in the mince cent city

2. The cream was good.

3. Joe drew a funny fierce face nice

4. The ball did two times
call bend bounce
Name

Look at the picture. Then find the word that names the picture from the list of words. Draw a line to the word that names the picture.

c. candle
1. corn
2. cow
3. camera
4. cot
5. cactus
6. coke
7. comb
8. coat
9. castle

A. cap
B. cat
When C is followed by O or A, the sound of K is likely to be heard.

Look at the following word pictures. Notice that the C has the sound of K. Look at the letters which follow the C.

Read each sentence. Then read the three words below each sentence. Write the word that best completes the sentence on the line. Complete the sentence in the box first.

The ___________________ was eating grass.

cake cow cot

The wheel on the ___________________ was broken.

cart can't cow

There was a yellow flame on the ___________________.

car cat candle

Bill lost his red ___________________.

cool come cap

It was ___________________ inside the cave.

cat cool call
A. The cub scout slept on the ______.  
cash  cot  cat

B. The old man had a kind ______.  
lace  face  certain

1. The rain made it very ______.  
outside  cool  come  climb

2. Mary is ill and ______.  
go to school  count  catch  can't

3. The ______. was good to eat.  
cat  cot  cake

4. Jim ran between the rows of ______.  
cowboy  corn  can

5. The ball ______. high.  
fierce  dance  bounced

6. John climbed over the ______.  
cellar  fence  lace

7. The ______. stopped the cars.  
policeman  nice  put

8. Carol had one ______. in her hand.  
ice  city  cent