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UTILITY OF VOWEL DIGRAPH GENERALIZATIONS IN GRADES ONE THROUGH SIX.

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SOME VOWEL DIGRAPH GENERALIZATIONS PRESENTLY TAUGHT WERE INVESTIGATED TO DETERMINE THE OVERALL UTILITY OF THE GENERALIZATIONS WHEN APPLIED TO A LIST OF REPRESENTATIVE WORDS MET BY CHILDREN IN READING INSTRUCTION IN GRADES 1 THROUGH 6, TO DETERMINE THE UTILITY OF ALL POSSIBLE SUBGROUPS OF ADJACENT VOWELS, AND TO EVOLVE NEW DIGRAPH GENERALIZATIONS APPLICABLE TO LARGE NUMBERS OF WORDS. AN OVERALL UTILITY OF 33 PERCENT WAS FOUND WHEN THE ORIGINAL VOWEL DIGRAPH GENERALIZATION WAS APPLIED TO A LIST OF 506 WORDS CONTAINING ADJACENT VOWELS. FOUR SUBGROUPS HAD A PERCENTAGE OF UTILITY ABOVE 50 PERCENT -- "AI," "EA," "EE," AND "OA." TWO GENERALIZATIONS WHICH WERE FORMULATED AND INVESTIGATED YIELDED 72 AND 92 PERCENT OF UTILITY. THE STUDY CONCLUDED THAT CHILDREN IN GRADES 1 THROUGH 6 SHOULD IMPROVE IN WORD ANALYSIS IF THEY UNDERSTAND THAT WHEN TWO VOWELS ARE TOGETHER IN A WORD, ONLY ONE VOWEL SOUND IS USUALLY HEARD. MORE SPECIFIC PHONIC GENERALIZATIONS SHOULD PROVE USEFUL TO THE CHILDREN WHO SHOULD KNOW THAT VOWEL DIGRAPHS ARE USUALLY AFFECTED BY THE CONSONANTS THAT FOLLOW. CARE SHOULD BE TAKEN TO ASSIST CHILDREN TO DEVELOP FLEXIBILITY IN THE USE OF ALL PHONIC GENERALIZATIONS. TABLES AND REFERENCES ARE INCLUDED. THIS PAPER WAS PRESENTED AT THE INTERNATIONAL READING ASSOCIATION CONFERENCE (BOSTON, APRIL 24-27, 1968). (JMM)

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TITLE: "Utility of Vowel Digraph Generalizations in Grades One Through Six"
RESEARCH REPORTS: PHONICS
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Phonic generalizations have long played an important role in reading instruction in the elementary school. Numerous authors of textbooks in the teaching of reading recommend that phonic generalizations be included in the reading program, and most basal reading series include phonic generalizations in the program of instruction. Of all the recommended phonic generalizations, possibly the generalization which is most widely known and most often taught is the vowel digraph generalization--

the generalization commonly stated, "When two vowels are side by side, usually the long sound of the first vowel is heard and the second vowel is silent," or, in many first and second grade classrooms, "When two vowels go walking, the first one does the talking."

Despite such wide and time-honored acceptance, little research on the usefulness of the vowel digraph generalization had been reported prior to 1963, when two studies, one by Clymer (5)and another by Burrows and Lourie (4) were published. Clymer reported the results of an investigation of the utility of forty-five selected phonic generalizations in the primary grades, one of which was the vowel digraph generalization, and concluded that many generalizations were found to possess limited value. Special attention was directed by Clymer to the vowel digraph generalization which was found to possess only forty-five per cent utility in that study. Burrows and Lourie (4) explored the reliability of just one phonic generalization, the vowel digraph rule, and found that only thirty-nine per cent of the words investigated in that study followed the rule.

Recent studies on phonic generalizations by Bailey (2), Emans (6), and Burmeister (3) have also reported, without exception, failure of the vowel digraph generalization to be useful. Bailey reported findings of thirty-four per cent utility; Emans, eighteen per cent utility, and Burmeister categorized the generalization as one found to possess only limited usefulness.

Purposes:

The purposes of the present study were to (1) investigate the overall utility of the vowel digraph generalization when applied to a list of words representative of words met by children in reading instruction in grades one through six, (2) determine the utility of all possible subgroups of adjacent vowels (aa, ae, ai, ao, au, ea, ee, etc.), and (3) explore the possibilities of evolving new vowel digraph generalizations that would apply to large numbers of words and possess high percentages of utility.

Procedure:

The vowel digraph generalization, ordinarily stated, "When two vowels are side by side, usually the long sound of the first vowel is heard and the second vowel is silent," was applied to a word list collected in a previous study by Bailey (1). The original word list consisted of the entire vocabularies of eight basal reading series, grades one through six, published in the United States during or since 1960, and was pronounced, for purposes of the present investigation, representative of words met by children in reading in grades one through six.

The vowel letters a, e, i, o, and u only were investigated, and Webster's New Collegiate Dictionary (7) was used as the dictionary of authority for the pronunciation and syllabic division of all words

considered in the study. In every instance, only the first-listed pronunciation was recorded.

Percentage of utility for the original vowel digraph generalization was computed by dividing the total number of incidents which conformed to the generalization by the total number of incidents investigated. Likewise, percentages of utility for the twenty-five subgroups of adjacent vowel combinations were computed in the same manner.

Results:

When the original vowel digraph generalization was applied to the list of 1506 words containing adjacent vowel incidents, 490 words conformed to the generalization and 1016 words were exceptions, resulting in an over-all utility of only thirty-three per cent. Table I presents the results.

TABLE I

UTILITY OF THE ORIGINAL VOWEL DIGRAPH GENERALIZATION*

Number of Incidents Investigated	Number of Conformations	Number of Exceptions	Percentage of Utility
1506	490 (paint)**	1016 (been)**	33

*When two vowels are side by side, usually the long sound of the first vowel is heard and the second vowel is silent

**Examples of words that conformed or were exceptions to the generalization

Data obtained from the analysis of each of the twenty-five subgroups of adjacent vowel combinations are presented in Table II. Only four subgroups were found to have a percentage of utility above fifty per cent: ai, ea, ee, and oa. Frequency of occurrence in each of these four subgroups wasconsidered sufficiently high to warrant further investigation.

In an attempt to determine the possibility of formulating new vowel digraph generalizations that would prove useful to children in grades one through six, two new generalizations were formulated and investigated. Examination of Table III reveals that a generalization stated, "When two vowels are side by side, usually only one vowel sound is heard," was found to possess a high utility of ninety-two per cent. The second newly-formulated vowel digraph generalization, "When ai, ea, ee, or oa is found in a word, usually only the long sound of the first vowel is heard," was applicable to 602 words. Four hundred and thirty-three words conformed to the generalization and 169 words were exceptions, yielding a percentage of utility of seventy-two per cent.

Although no attempts were made in the present study to investigate the possibilities of rewording, restricting, or formulating new generalizations relative to adjacent vowel combinations that yielded low percentages of utility, it should be noted that Table I reveals the following adjacent vowel subgroups, with low percentages of utility and high frequencies of occurrence, that presented definite and consistent patterns

TABLE II

UTILITY OF THE VOWEL DIGRAPH GENERALIZATION WHEN APPLIED TO TWENTY-FIVE ADJACENT VOWEL COMBINATIONS

Adjacent Vowel Combinations	Number of Incidents Investigated	Number of Conformations	Number of Exceptions	Percentage of Utility
aa	1	0	1 (bazaar)*	0
ae	1	0	1 (phaeton)	0
ai	118	84 (bait)*	34 (air)	71
ao	0	0	0	0
au	45	0	45 (caught)	0
ea	252	141 (peach)	111 (pear)	56
ee	166	145 (cheek)	21 (been)	87
ei	30	9 (ceiling)	21 (freight)	30
eo	13	1 (people)	12 (geography)	8
eu	4	0	4 (museum)	0
ia	45	0	45 (giant)	0
ie	86	6 (lie)	80 (friend)	7
ii	1	0	1 (taxiing)	0

TABLE II (continued)

Adjacent Vowel Combinations	Number of Incidents Investigated	Number of Conformations	Number of Exceptions	Percentage of Utility
io	178	0	178 (union)*	0
iu	7	0	7 (aquarium)	0
oa	66	63 (road)*	3 (cupboard)	95
oe	12	5 (toe)	7 (shoe)	42
oi	43	0	43 (boil)	0
oo	124	2 (door)	122 (cool)	2
ou	185	17 (four)	168 (fought)	9
ua	38	0	38 (equal)	0
ue	38	12 (continue)	26 (fuel)	32
ui	50	5 (nuisance)	45 (ruin)	10
uo	2	0	2 (buoy)	0
uu	1	0	1 (vacuum)	0
Totals 25	1506	490	1016	33

*Examples of words that conformed or were exceptions to the generalization

TABLE III

NEW VOWEL DIGRAPH GENERALIZATIONS

New Generalizations	Number of Incidents Investigated	Number of Conformations	Number of Exceptions	Percentage of Utility
1. When two vowels are side by side, usually only one vowel sound is heard.	1506	1381 (juice)*	125 (idea)*	92
2. When ai, ea, ee, or oa is found in a word, usually only the long sound of the first vowel is heard.	602	433 (pail) (bead) (feel) (goat)	169 (pair) (steak) (been) (cupboard)	72

*Examples of words that conformed or were exceptions to the generalization

in regard to exceptions: au, ia, io, oi, oo, ou, and ua. Hopefully, children should learn to recognize oi and ou as diphthongs and, thus, eliminate any need for applying vowel digraph generalizations when oi and ou are met in word analysis. Likewise, oo was found to usually have its own distinctive sounds, as in foot and cool; au nearly always had the sound of circumflex o (ô), as in caught; io was usually found in the phonograms tion and sion and then was pronounced as short u, as in vacation and permission; and when ia and ua were found within words, usually both vowel sounds were heard separately, as in giant and actual. Furthermore, results of the present study reveal that the value of vowel digraph generalizations would be greatly enhanced if elementary school children also learn that vowel sounds are altered when followed by the letter r, as in heard and fair.

Conclusions:

Children in grades one through six should gain help in word analysis if they understand that when two vowels are together in a word, only one vowel sound is usually recorded. The following generalization might well be the first developed by children regarding vowel digraphs, for it is basic and underlies other, more-specific phonic generalizations: "When two vowels are side by side, usually only one vowel sound is heard."

Results of the present investigation indicate that the following, more-specific phonic generalization should also prove useful to children

in word analysis: "When ai, ea, ee, or oa is found in a word, usually only the long sound of the first vowel is heard."

The value of the newly-formulated vowel digraph generalizations should be enhanced by affording children in the elementary grades the opportunities to learn that (1) oi and ou are diphthongs, (2) oo usually has its own distinctive sounds, (3) au nearly always has the same sound as a in call and raw, (4) io is usually found in the phonograms tion and sion and then is pronounced as short u, and (5) when ia and ua are found in words, usually both vowel sounds are heard separately. Also, children should be aided in word analysis by the knowledge that the sounds of vowel digraphs are usually affected by the consonants that follow, notably r following a vowel digraph.

Finally, care should be taken to assist children in the development of flexibility in the use of all phonic generalizations.

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1. Bailey, Mildred Hart. "An Analytical Study of the Utility of Selected Phonic Generalizations for Children in Grades One Through Six." Unpublished Doctoral Dissertation, 1965.

2. _____. "Utility of Phonic Generalizations in Grades One Through Six," Reading Teacher, 20 (Feb. 1967), 413-418.

3. Burmeister, Lou E. "Usefulness of Phonic Generalizations," Reading Teacher, 21 (Jan. 1968), 349-356, 360.

4. Burrows, Alvina Treut and Lourie, Zyra. "When 'Two Vowels Go Walking,'" Reading Teacher, 17 (Nov. 1963), 79-82.

5. Clymer, Theodore. "Utility of Phonic Generalizations in the Primary Grades," Reading Teacher, 16 (Jan. 1963), 252-258.

6. Emans, Robert. "Usefulness of Phonic Generalizations Above the Primary Grades," Reading Teacher, 20 (Feb. 1967), 419-425.

7 Webster's New Collegiate Dictionary. Springfield, Massachusetts: G. and C. Merriam Company, Publishers, 1961.