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1. Announcements

Reading: Spellings and Word Perception

Special Interest Group, I.R.A. Convention, Thurs. April 30, 1981, 2:00 to 4:45 P.M.

Belle Chase Room, Hilton Hotel, New Orleans, La.

Dr. Emmett, A. Betts, organizer, Prof. Emeritus, Univ. of Miami, Fla.

Purposes:

1. To promote continued research on the writing system (orthography) and word perception in reading.
2. To translate research for effective instruction in classroom situations.

Topics include: perceptual learning, factors in word perception; relationships between intonation and perception, between phonic rules and word perception, between perception and other facets of reading; phonemic and morphemic bases of spellings; methodology.

General Chairperson: Millard Black, past pres. I.R.A.

Part,1, Chair. Dr. Jack Haynes, Fla. So. College. Brief presentation to delineate needs.

Part 2, Chair. Dr. Lawrence Chatty, Phila, Pa. Organizational and business meeting.

Part 3, Chair. Dr. Katherine P. Betts, Fla. So. College. Open-ended discussion between panel, participants, and conferees, guided by participants' lists of suggested questions and conferees' questions.

Among the participants already declared are:

Drs. Mildred Bailey, Northwestern Univ. of La.,
John Barnitz, U. of New Orleans,
Paul Berg, U of So. Car.,
Walter Bathe, Editor-in-Chief,
Zaner Blozer,
Elsie Black, Whittier, Ca.,
Kent Brown, Editor, *Highlights for Children*,
Gene Blair, E. Illinois U.,
Lou Burmeister, U. of Texas, El Paso,
Martha and Earl Donald Cleland, U. of Pittsburg,
Pat Cunningham, Wake Forest U., Winston
Salem, N.C.,
John Downing, U. of Victoria, B.C.,
Ed Fry, Rutgers U.,
James Hoffman, U. Texas,

Thomas Horn, U. Texas, Austin,
Robert Kikawa, Honolulu, Hi.,
George Mason, U. Ga.,
John H. Martin, Fla.,
Donald McFeely, Indiana U. of Penna.,
Gaye McNeetl, U. Okla.,
Sharon O'Neal, U. Texas, Austin,
Betty Roe; Tenn. Tech. U.,
Nancy Roser, U. Texas, Austin,
Floyd Sucher, Brigham Young U.,
Helen Terrill, Pawhuska Schools,
Eric Thurstone, La. St. U.,
Josephine Wolfe, Beaver C.,
Miles Zintz, U. N. M

Dr. John Downing (Editor)

announces a new national bilingual journal devoted to reading. It is called *Reading-Canada-Lecture*, and is a refereed quarterly journal which aims to improve communication between educators within Canada and between Canadians and colleagues in other countries. *R-C-L* also will provide a forum between English speaking and French speaking educators whose mutual concern is the improvement of reading instruction in these two languages. We envisage that *R-C-L* will be read mainly by classroom teachers, but that there will be other readers such as school administrators, consultants, parents, university faculty members, etc. *R-C-L* will be open to all points of view regarding reading theory and practice. Articles will relate to all levels: pre-school, elementary, secondary, college and adult. We are currently particularly interested in receiving manuscripts on themes of practical concern to classroom teachers and clinicians. Articles will be published in full in the original language of the author, either English or French. In addition there will be a summary in the other language. *R-C-L* welcomes articles in either English or French from authors in any country in the world.

Other editors are: Carl Braun, Univ. of Calgary, Anne Forester, Camosun College, B.C., Claude Langevin, Univ. Laval, Quebec, Edward G. Summers, Univ. of B. C. In addition there are 19 associate editors from various Canadian colleges and universities. Cost will be \$25.00 per year to libraries and institutions, \$20.00 to individuals. Write to Anne Forester, Camosun College, Victoria, B. C., Canada.

3rd International S.S.S. Conference on Reading & Spelling

It is not too late – if you act now – to enter a paper in the SSS Conference July 31-Aug. 3, 1981 at Edinburgh, Scotland. Conference fee to cover admin. expenses is £10. Accomodation expense, including meals, is £35. For more information, Americans can write Vic Paulsen, San Francisco, Ca. Britishers should write to Mrs. Valerie Yule, Old Aberdeen, Scotland.

[Spelling Progress Bulletin Summer 1981 p2 in the printed version]

2. Spelling Irregularity, Spelling Reform, and Learning to Read Meaningfully, a Commentary by Dr. John G. Barnitz.*

*Univ. of New Orleans, New Orleans, La.

Editor's note: Because Dr. Barnitz did not have an opportunity to reply to comments by others on his article printed in our Winter 1980 issue, he is here given a chance to overcome some misconceptions by readers of his article, "Linguistic & Cultural Perspectives on Spelling Irregularity."

Spelling reformers have proposed a variety of changes in English orthography as a means of facilitating learning to read. Although much linguistic conservatism and the general nature of adult literacy have made total orthographic reform a formidable task (c.f. Stubbs 1980), proponents and opponents of spelling reform share a common goal of fluent literacy.

The fluent reading process, according to current psycholinguistic theory (Goodman 1967, Smith 1973), involves less emphasis on graphic-visual characteristics and more emphasis on semantics and text structure. Furthermore, much research is currently being generated to demonstrate that reading involves an interaction of the various levels of language and the background knowledge of the reader in constructing meaning (Center for the Study of Reading [\[1\]](#)). Thus, the focus of reading instruction must be on comprehension. However, the beginning reader must learn to crack the orthographic code as *part* of (but not as the *essence* of) learning to read. [\[2\]](#) Yet, beginning reading would involve more spelling-sound relationships than would fluent reading (Shuy 1977).

In considering spelling reform, two questions need to be answered:

- (1) Is the English spelling system the most "optimal" for *learning* to read?
- (2) Is spelling reform the only step toward literacy improvement? In other words, until spelling reform is achieved, how can teachers facilitate reading of traditional orthography?

Chomsky (1973) claimed that the English writing system is predictable because it captures the abstract underlying phonological structure of words as well as the meaningful relationships among related words: Thus, the silent *g* of *malign* is related to the pronounced *g* in *malignant*. Likewise, the schwa sound of *o* in *composition* is related to the *o* in *compose*. The orthography preserves the meaningful relationships of these words as an assistance to the *fluent* reader who focuses on meaning rather than on phonetic details: While many sets of words follow predictable phonological alternations, some experimental evidence has questioned the psychological reality of some of the phonological processes claimed by Chomsky and Halle (1968). (See Steinberg (1973) and Ohala (1974).) Furthermore, many of the elements of traditional orthography have little psychological basis, as they were the result of linguistic and cultural history (Barnitz 1980). [\[3\]](#) Thus, English spelling is certainly not as optimal as originally claimed in Chomsky and Halle (1968).

Would a more direct phonemic alphabet facilitate learning to read? Cross-cultural and cross-linguistic research suggests that the regularity of fit between phonological systems and writing systems facilitates, learning to decode spelling into sound as part of beginning reading (Downing 1973, Barnitz 1978). Furthermore, evidence from research on transitional writing systems suggests the role of regularity in learning to read (Downing 1965, Gleitman and Rozin 1973) However, an overemphasis on decoding is not the essence of reading (Goodman 1967). Yet, regularity of writing systems does greatly help the reading learning process.

The second major question will be answered briefly. Until total spelling reform occurs – despite the many resistances (c.f. Stubbs 1980) – children still need to be taught the *meaningful* reading process, regardless of the orthography. For decoding is only a small part of the learning to read process. Goodman 1967, Shafer 1979). As traditional orthography still survives, how can teachers circumvent the problems of "irregularity." Here are only a few suggestions:

- (1) Emphasize the total language-meaning relationships in reading instruction. This can be done, for example, by using the Language Experience Approach (Stouffer 1980, Veatch et al. 1979). (See also the many reports from the Center for the Study of Reading).
- (2) Develop word attack skills within the context of meaningful comprehension.
- (3) Using natural language, provide as much regularity as possible in teaching beginning reading. Begin with regularities, then move to irregularities (Bloomfield 1942), but emphasize the total reading process.
- (4) As the meaningful relationships among many words are preserved in traditional orthography (*malign-malignant*), some aspects of these may be introduced for *older* readers. However, not all relationships have psychological reality. Instructional research is needed here. These suggestions alone will not solve all the literacy problems. Of course, spelling reform will be of assistance. However, until and even after spelling reform does occur, teachers must emphasize *meaning* in reading instruction.

Footnotes

- [1] The Center for the Study of Reading was established in 1976 to conduct research on reading comprehension and to make suggestions for reading instruction. To receive lists of technical and educational reports, write to: Center for the Study of Reading, 174 Children's Research Center, Univ. of Illinois, Champaign, IL, 61820.
- [2] For recent information on spelling research, see *Developmental and Cognitive Aspects of Learning to Spell: A Reflection of Word Knowledge*, edited by Edmund Henderson and James Beers (1980), International Reading Assoc., Newark, DL.
- [3] The "Barnitz article" was not written as an argument against spelling reform nor as a defense of traditional orthography of English. Many of the irregularities of English spelling are a result of its linguistic .and cultural heritage.

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[Spelling Progress Bulletin Summer 1981 pp3–5 in the printed version]

(Reprinted from "EDUCATION" for May, 1952)

3. A Study of the Consonant Situations in a Primary Reading Vocabulary*

By ELSIE BENSON BLACK

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*Master's Thesis, Teachers College, Temple University, 1951.

Statement of the Problem

THIS was an investigation of the pronunciation of consonants in syllabic situations in a primary reading vocabulary. Data were obtained on the following 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?

Justification

There appear to be two justifications of this study. First, studies of the phonetic pronunciation of word elements at each reader level provide the basis for determining the point at which certain phonetic elements may be introduced for systematic study. Second, studies of phonetic structure may provide a basis for deriving readability formulae. Two current reviews of readability studies indicate that this element is not a part of any such formula now available [9; 14].

Limitations

The words analyzed were taken from a single vocabulary study [8]. These appeared in at least ten of the fourteen different series of basal readers. Only base forms and compound words were selected for analysis [8]. Reader levels studied ranged from primer through third.

The syllable was the unit used for analysis. Both initial and final consonant phonograms were analyzed and tabulated. Syllabication and respellings for pronunciation were based on Webster's New International Dictionary [33].

Definitions

Terminology used in this study is defined as follows:

1. *Base form*. A base form, as used in this study, is the original uninflected word to which initial or final inflections may be added, as *buy*, *go*, *stone* [34].
2. *Consonant blend*. A consonant blend is made by blending consonant sounds together without the loss of identity of any of them (e.g., *bl*, *dr*, *fl*, *str*) [4].
3. *Consonant digraph*. A consonant digraph consists of two consonant letters representing one speech sound (e.g., *who*, *know*, *would*) [4].
4. *Phonetics*. The science of speech sounds is called phonetics.
5. *Phonics*. The science of speech sounds applied to written language is called phonics [4].
6. *Phonogram*. A phonogram is a word element or "a character or symbol used to represent a word, syllable, or single speech sound" [29].

Related Literature

Early studies of phonetic elements in primary reading vocabularies were conducted by Vogel and Washburne [31, 32].

In 1925, Anna D. Cordts reported *An Analysis and Classification of the Sounds of English Words in a Primary Reading Vocabulary* [12], based on four published studies of the vocabularies of primary readers. Cordts analyzed 2,716 different words in terms of their phonetic elements. She found (1) 224 phonetic words among approximately 1600 one syllable words, (2) the letters *s* and *p*, used in combination with other consonant letters, to appear with the greatest frequency, and (3) the consonant phonogram *ch* to appear in final position more frequently than in initial position. Cordts reported a total of 1066 phonic words in her study. Of these, 297 words contained single vowels with the sound ascribed to them. The second group contained 264 words in which there were combinations of vowels with the sound assigned them. The third group contained 485 words to which no assignment of vowel letters to vowel sounds had been made. The final classification of Cordts' study included the irregular words, 294 in all. These were words which could not be classified as either phonetic or phonic words.

In 1926, Ruth Atkins [2] analyzed the frequencies of letter symbols and phonetic equivalents appearing in Thorndike's *Teacher's Word Book* [30].

Denny [15], in 1936, reported a study of phonetic elements based on the Gates' lists [20] of first 500 Words and Second 500 Words, and the Wheeler and Howell list published in 1930. She concluded that instruction in the recognition of initial phonetic elements, particularly "long" and "short" vowel sounds, will be useful in first and second grades.

In 1950, Oaks reported "*A Study of the Vowel Situations in a Primary Reading Vocabulary*" [26; 7]. Oaks' study surveyed the application/ exception ratio of rules for the pronunciation of words. Her study was limited to the primer, first, second, and third-reader levels. She reported that the ratio of application (of rule) to exception (of rule) in the following situations is great enough to merit consideration in the phonetic analysis instructional program:

- (1) "short" vowel principle in closed syllables
- (2) "long" vowel principle in syllables ending with a final *e*
- (3) "long" (single) vowel principle in open accented syllables

Oaks concluded that the recognition of vowel digraphs should be systematically taught at the primary level for two reasons: (1) there are several types of digraphs, and (2) two letters frequently represent diphthongs.

Among the indirectly related studies are those of Spache [28], Dolch [16; 17; 18], Gunderson [21], and M. H. Black [11].

Summary:

The studies reviewed emphasized the unphonetic character of our language. Many different sounds were found for one phonogram. Some were found to have as many as eleven pronunciations [2]. While there was agreement that some phonetic training should be given, it would seem that instruction in other types of word recognition techniques would be necessary.

Procedure

The vocabulary used for this study was taken from the Betts' *Primary Reading Vocabulary Studies* [9], used also by Oaks in *A Study of the Vowel Situation in a Primary Reading Vocabulary* [28]. The reliability of Oaks' selection and of the phonetic respellings was determined.

The analysis of the vocabulary entailed the following steps. First, words were listed by reader level, and the pronunciation of each consonant phonogram was recorded. Second, the position of the consonant phonogram in the syllable, whether initial or final, was then tabulated. All tabulations were made in terms of the syllable in the word. Third, from these data were obtained the incidence of consonant letters, digraphs, trigraphs, blends, and other consonant situations.

Summary of Results

1. There were 4,063 consonant situations identified in 2,503 syllables of a primary reading vocabulary embracing 1,966 words. Among the 2,503 syllables, 105, or 4.2% contained no consonant situations. The remaining 2,398 syllables contained an average of 1.69 consonant situations per syllable.
 - a. Of the 4,063 consonant situations, 2,776 single letter consonants were identified. This type of phonogram accounted for 68.3% of all the consonant situations.
 - (1) A total of 1,573 single letter consonants, 38.7% of the consonant situations, appeared in the *initial* parts of the syllables.
 - (2) A total of 1,203 single letter consonants, 29.6% of the consonant situations, appeared in the final parts of the syllables.
 - (3) Single letter consonants appeared at all reader levels in both initial and final parts of the syllables.
 - b. Of the consonant situations in the study, 396, or 9.8% of all consonant situations, were consonant digraphs.
 - (1) The number of consonant digraphs introduced in the initial parts of the syllables was 122, or 3% of the consonant situations.
 - (2) The number of consonant digraphs introduced in the final parts of the syllables was 274, or 68% of the consonant situations.
 - (3) Consonant digraphs appeared at all reader levels in both initial and final positions in the syllables,
 - c. There were twenty-six consonant trigraphs, comprising .6% of the consonant situations, identified in the vocabulary.
 - (1) All trigraphs appeared in the final parts of the syllables.
 - (2) Trigraphs were introduced at first-reader level and were used at all succeeding levels.
 - d. Consonant blends were classified as two and three-letter blends. There were 613 two-letter blends, comprising 15% of the consonant situations, in the study. Totalling 53, the three-letter blends accounted for only 1.3% of the consonant situations.
 - (1) A total of 336 two-letter blends, 8.2% of the consonant situations, was used in the initial parts of the syllables. Only thirty-two three-letter blends, comprising .8% of the total consonant situations, were used in initial positions.
 - (2) There were 277 two-letter blends, or 6.8% of all consonant situations in the study, in the final parts of the syllables. Twenty-one three-letter blends were tabulated in the final parts of the syllables. This was only .5% of all consonant situations.
 - (3) Two-letter blends were identified at all reader levels, three-letter blends appeared at first-reader level and were used at all succeeding levels.
 - e. In this study, 130 syllabic consonants and 16 syllabic blends were identified. The syllabic consonants comprised 3.3%, and the syllabic blends .4% of the total consonant situations.
 - (1) Syllabic consonants and syllabic blends appeared only in final syllables of words.

- (2) Syllabic consonants appeared at all levels; syllabic blends were introduced at first-reader level and used at all succeeding levels,
- f. In the "miscellaneous" situations classification, there were 52 consonant situations.
- (1) One "miscellaneous" phonogram, *ear* [3] as in *earth*, appeared three times in the initial syllable or parts of syllables. This total comprised .1% of the total situations.
 - (2) Thirty, .8% of the total consonant situations, appeared in the medial parts of syllables.
 - (3) Nineteen, .5% of the total consonant situations, appeared in final positions in the syllables.
 - (4) "Miscellaneous" phonograms appeared in initial positions at second-reader level, and in medial and final positions at all reader levels.
2. Of the consonant and vowel-colored *r* situations analyzed in this study, 606 involved letter *r*. These accounted for 14.9% of all consonant situations tabulated.
- a. A total of 264 letter *r* phonograms, 6.5% of all consonant situations, appeared in initial syllabic positions.
 - b. Thirty vowel-colored *r* [3] situations (e.g., *bird*), comprising .7% of the total consonant situations, appeared in medial positions.
 - c. There were 310 letter *r* situations, 7.7% of all consonant situations in the vocabulary, identified in final parts of syllables.
 - d. Letter *r* situations appeared at all reader levels encompassed by this study.
3. There were 281 consonant phonograms, 6.9% of the total consonant situations, containing silent letters.
- a. A total of 74 consonant situations, appearing in the initial parts of the syllables, contained silent letters. This was 1.9% of the total consonant situations.
 - b. There were 207 consonant phonograms, 5% of all consonant situations appearing in the study, involving silent-letter situations which appeared in final positions.

Conclusions

Within the limitations of the data presented in this study, the following conclusions appear to be valid:

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 in 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 per cent 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* 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.

Implications

This study appears to have certain implications for those persons interested in the field of reading:

1. It may assist in the development of a more nearly adequate phonetic analysis program.
2. This material may be useful as a basis for readability study. Data are presented on:
 - (a) the types of consonant elements found in the vocabulary,
 - (b) the position of the consonant elements in the syllable,
 - (c) the reader level at which each consonant phonogram was introduced, and
 - (d) the incidence by reader level of each consonant situation.

Suggestions for Further Research

The following problems seem to merit further research:

1. an analysis of the syllabic situations of a primary reading vocabulary
2. a semantic analysis of a vocabulary used in the primary grades
3. an analysis of the consonant situations in "trade books" at given "levels" of readability
4. a study of the consonant situations in an intermediate reading vocabulary.

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4. A Study of the Vowel Situation in a Primary Vocabulary*

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THROUGH an investigation of the vowels and vowel combinations which appear in certain basal readers designed for use in the primary grades, data were obtained on 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 of the vowel situations 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?

An actual accounting of the vowel situations in the "newer" primary readers is needed to serve as a basis for setting up instruction in phonetic analysis. In the first place, such an accounting is necessary to show what should be taught. Second, a knowledge of the effectiveness and limitations of teaching the phonic principles is needed to provide for economy in instruction. Other methods of word learning will have to be employed in situations where the principles do not "hold true." Third, there is a need for information concerning the level at which each vowel is sufficiently represented to make instruction in that area profitable.

It is believed that only a few studies exist which are concerned with vowel situations at these levels. Probably the most important of these is the investigation by Anna D. Cordts of the vocabularies of forty-two primary readers, the dates of which range from 1892 through the early 1900's. Dr. Cordts, herself, expressed the need for an investigation of the vocabularies of the "newer" readers [\[5\]](#). This study was an attempt, in part, to satisfy that need.

There are six limitations which govern the scope of this study.

1. All the words chosen for analysis were taken from one vocabulary study [\[4\]](#).
2. The words used are the base forms of the words. In addition, those compound words which were found in the vocabulary study were also included.
3. Only the words which appeared in from ten to fourteen of the fourteen different series of readers in the vocabulary study were analyzed.
4. The reader levels ranged from the primer through the third reader. Since only nineteen preprimer words fell within the limitations set up, the preprimer level was eliminated.
5. In each word, the sound or sounds of the vowels considered were those indicated by the respelling in the Webster's New International Dictionary [\[9\]](#). This procedure resulted in an analysis from an orthographic rather than an auditory standpoint.

6. Errors in transferring the words from the study and in classifying them were eliminated, insofar as possible, by checking and rechecking. A one-hundred-word sampling at each level showed no discrepancies.

The following definitions are an explanation of the terminology used in this study:

Long vowel sound. A "long vowel sound" is that sound which is the same as the name of the vowel symbol. It is indicated in the respelling by a macron placed above the vowel symbol.

(Examples: gate, these, fine, rode, use)

Short vowel sound. A "short vowel sound" is the sound indicated by a breve placed above the vowel symbol. (Examples: cat, bed, fit, hot, mud)

Vowel digraph. A "vowel digraph" is composed of two adjacent vowel symbols which represent a single speech sound. (Examples, road, field)

Diphthong. A "diphthong" is a union of two vowel sounds pronounced in the same syllable. (Example: cow-kou)

Open Syllable. An "open" syllable is one which ends with a vowel symbol. (Example: *pa.per*)

Closed syllable. A "closed" syllable is one which ends with a consonant symbol. (Example: *cap.tain*)

Unstressed syllable. An "unstressed syllable" is the syllable which does not receive accent or emphasis. (Example: *be.fore*)

Phonic principle. A "phonic principle" is the statement of a generalization which can be made following the analysis of phonetic situations. In this study, the phonic principles are concerned only with vowel situations.

Vowel situation. A vowel situation is one which embraces a given vowel letter or combination of vowel letters used to represent a vowel sound in a given syllabic setting (e.g., the "long" *a* sound in *ate* and *baby*; "short" *a* sound as in *cat*). For the purpose of this study, each of these three syllabic settings is a different vowel situation. In *ate* the vowel is affected by the final *e* in the word; in *baby* the *a* is the last letter of an open, accented syllable; and in *cat* the *a* is located in a closed syllable.

In short, a vowel situation embraces three things:

- (1) The letter or combination of letters,
- (2) the vowel sound, and
- (3) the "explanation" of the vowel sound.

A Review of the Related Literature

Studies concerned with the phonetic elements of primary reading vocabularies are comparatively few. Herein is given a brief review of the more important ones.

One investigation which has a bearing on this study was made by Anna D. Cordts in 1925 [5]. It was the purpose of the Cordts study "(1) to determine the Phonetic values of the letters of words in a primary reading vocabulary and (2) to classify the words according to the phonetic elements which compose them." Dr. Cordts maintained that if phonics were to be taught, then the selection of the phonic elements used in instruction should be made on a scientific basis.

The vocabulary which Dr. Cordis analyzed was selected from forty-two readers which were published around the early 1900's. She stated that the vocabulary was taken from the older readers because vocabulary counts of the newer readers were not available at the time of her investigation.

The selected words, a total of 2,716, were analyzed according to the phonetic elements which composed them. The results of this analysis were used to classify the words as phonetic, phonic, or irregular words.

A "phonetic word" was defined as one in which every letter in the word represented the particular sound which was arbitrarily assigned to that letter, and in which every sound was represented by that letter and that letter only.

Out of approximately 1600 one-syllable words, 224 phonetic words were found.

The total number of words classified as phonic words was 1066. They were divided into three classes for which definite criteria were set up.

The first class embraced single vowels which had the sound that had been assigned to them. This list contained 297 words.

The second class contained words in which there were combinations of vowels which had the sound assigned to them. In this list there were 284 words.

In the third class were listed words to which no assignment of vowel letters to vowel sounds was made. There were, however, enough of these words which contained similar vowels to permit sub-classification. This list contained 485 words.

The final grouping was that of irregular or "freak" words. These were words which failed to meet the criteria for the phonetic or phonic words. There were 294 of these.

Of the 1600 one-syllable words which were classified, less than one-fifth were purely phonetic. About half of the phonic words fell into the third class in which there was no definite assignment of sounds to the vowels. The irregular words comprised about one-fifth of the total.

Counting the phonetic words and the phonic words of the first and second classes, there were only 805 or about one-half of the words which could be taught according to phonic principles.

Using the Cordts study as a basis for investigation, Ernest Horn found forty-seven different sound-letter associations for the letter *a* alone. Horn says that "no one interpretation of the letter *a* has a majority of uses in its favor either as measured by the number of different words falling under it or the total frequency of occurrence as measured by running words" [\[8\]](#).

Horn found that the sound of *a* as in *cat* and *have* occurred most often, and the "long" *i* sound of *a* as in *aye* occurred least often.

Another interesting tabulation in the Horn study showed eight different sound values for the vowel digraph *ea*. And in still another, the way in which syllabication separates adjacent vowels which usually appear as digraphs was shown (e.g. *idea*, *Noah*). Horn does not advocate that the teaching of phonics be eliminated, but he insists that a teacher must be aware of all these differences in order to do satisfactory teaching.

Two studies of phonetic elements in primary reading materials were made by Washburne and Vogel [\[11, 12\]](#). The first, done in 1922, used the primary reading vocabulary published in the Twentieth Yearbook of the National Society for the Study of Education. Its purpose was to find the phonograms most useful in the first and second grades. By 1928, the second-grade list of phonograms was considered unsatisfactory so a new survey was made. This time the Gates list, published in 1926, was used as the basic word list.

Vowels affected by the final *e* were found to be most frequent in the 1922 study, and the second most frequent in the 1928 study. In the latter, short *i* ranked first. This is in agreement with the

Denny study [7] done some eight years later. In the recommended lists, vowels, both "long" and "short," were prominently placed.

In 1936, Velma Denny [7] investigated several vocabulary studies to determine the phonetic elements involved. For her study she used the Gates lists of the First 500 Words and the Second 500 Words published in 1935, and the Wheeler and Howell list published in 1930. She tabulated these words under the different sound elements such as consonants, double consonants, vowels, and phonograms.

Miss Denny found that in a comparison of the three lists the "short" *i* sound appeared most often with vowel sounds affected by final *e* ranking next. All of the vowel sounds were fairly high in frequency except the "long" sound of *u* which appeared in only nine words out of the 1500 investigated.

It is difficult to compare the Cordts and Denny studies, however, because the latter gives no authority for the pronunciations used. Neither does she take into consideration the differences in sounds of the vowels caused by stress and/or lack of it.

It is also difficult to know exactly what is meant by "long" and "short" vowels since no definitions are given for them. And, because the different vowel sounds are mixed indiscriminately, it is impossible to judge from the lists, themselves.

In her conclusion, Miss Denny presents a recommended list of phonetic elements to be taught in the first and second grades. These include all of the long sounds of each of the vowels and all of the short sounds. Since all but one of these show high frequencies in the results of her investigation, she contends that they will be useful to a beginning reader.

Using a somewhat different attack on the problem, Ruth Atkins [2] made an analysis of frequencies of occurrence of letter symbols with one pronunciation in words in the Thorndike list. She found that very few letters stood for only one sound, and she also found a great many sounds for some of the symbols. Miss Atkins contends that there is some justification for teaching phonics but that they can not be relied upon completely in word recognition.

Donald Agnew [1] has reviewed the various studies which have been made of phonetic elements in primary reading materials. In these studies, he found close agreement on the part of the investigators concerning the unphonetic character of the English language. There was, however, a diversity of opinions on how these findings should be interpreted. Some educators contend that the task of teaching phonics is almost too great an undertaking for the elementary school, while others claim that adequate reading skills cannot be acquired without the mastery of phonics.

In the six studies which were reviewed in connection with this investigation, each dealt with the phonetic elements which appear in the vocabularies of materials designed for use in the primary grades.

From the results of these studies, it is apparent that the authors, while advocating the teaching of phonics, also recognize the limitations imposed by the non-phonetic character of the English language. They suggest that additional aids to word recognition will have to be employed.

The Method of Investigation

The procedure used to obtain the data embraced four steps: first, the identification of the words to be analyzed at each of four reader levels, primer through third-reader level; second, the identification of the diacritical markings for the vowels; third, the identification of the phonic

principles which could and could not be applied to the vowel situations; and fourth, the selection of other factors in the pronunciation of the vowels; namely, vowels in unstressed syllables and "silent" vowel letters.

Primary Reading Vocabulary Studies by Emmett A. Betts [4] were selected because they were the most recent of such studies at the time of this investigation, and because they were concerned with the vocabularies of the "newer" readers. (Publication dates ranged from 1932 to 1939.)

Further selection of vocabulary was necessary to provide a useful list of words for this study. The derived forms of the words made little difference in the types of vowel situations, therefore, only keywords were used. Abbreviations and contractions were excluded from consideration.

While the inclusion of a word in the vocabulary was not considered sufficient reason for selecting it, its appearance in many of the books was assumed to add to its importance. "Spread," therefore, was a major factor in the selection. The words which appeared in ten to fourteen different series at each reader level were finally selected for analysis. Table I shows their distribution at each reader level.

TABLE I
SUMMARY OF DATA:
THE DISTRIBUTION OF THE SELECTED VOCABULARY

<i>Reader Level</i>	<i>Number of Words</i>	<i>Number of Syllables</i>
Primer	112	122
First Reader	257	805
Second Reader	592	747
Third Reader	<u>1005</u>	<u>1329</u>
Total	1966	2503

To facilitate the classification of the vowel situations, each word was written in its respelled form with appropriate diacritical and accent marks. *Webster's New International Dictionary* [9] was used as the authority for these respellings.

Each word was classified according to the diacritical markings of the vowel or vowels it contained. In the case of a word of more than one syllable, each syllable was tabulated separately. Some words, therefore, appear in more than one classification. Attention was given to both stressed and unstressed syllables.

The phonic principles which operated in the pronunciation of the vowels in the vocabulary under investigation were stated and numbered. To check on the applicability of the phonic principles, two sets of tables were set up. They provided information on (a) the number of applications of the principles and (b) the number of exceptions to them.

Certain vowels, because of their use in unstressed syllables, could not be classified as either applications of or exceptions to the phonic principles stated in this study. These were tabulated separately.

In summary, then, the organization of the data included the identification of

- (1) the words to be analyzed,
- (2) the diacritical markings of the vowel letters,
- (3) the phonic principles with their applications and exceptions, and
- (4) other factors in the pronunciation of the vowels; namely, vowels in unstressed syllables and "silent" vowel letters.

The Results of the Investigation

The information concerning vowel situations obtained as a result of this investigation is presented in three sections:

- (1) the types of vowel situations and their initial appearance,
- (2) the vowel principles together with the incidence of their applications and exceptions, and
- (3) other factors in the pronunciation of the vowels.

In the total vocabulary, which included 2,503 syllables, there were 103 different situations embracing single vowels; fifty-three situations embracing vowel digraphs; five situations embracing diphthongs; and one trigraph. This made a total of 162 different vowel situations in the vocabulary investigated.

Of these 162 different situations in the 2,503 syllables, fifty-six of them, or 35 per cent, appeared at the primer level. The remaining 65 per cent were distributed at the first, second, and third-reader levels. These data are summarized in Table II.

TABLE II
SUMMARY OF DATA:
FIRST APPEARANCE OF THE DIFFERENT VOWEL SITUATIONS

<i>Reader Level</i>	<i>Number of Situations</i>	<i>Percentage of All Situations</i>
Primer	56	35
First Reader	34	21
Second Reader	45	28
Third Reader	<u>27</u>	<u>16</u>
Total	162	100

To facilitate the handling of the data on the basic principles of phonics which were under consideration in this study, the principles were stated and numbered. Each principle was designated by its respective number.

The following principles appeared to operate in the pronunciation of the vowels embraced by the vocabulary under consideration.

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. This principle was designated as Principle I.

Examples: Stressed initial syllable *eve*.ning. Stressed final syllable sur.*prise*

II. When a stressed syllable containing only one vowel ends with that vowel, the vowel has its own "long" sound. This principle was designated as Principle II.

Examples: *pa*.per; *he*

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. This principle was designated as Principle III.

Examples: *cap*; *gen*.tle

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*. This principle was designated as Principle IV.

Examples: cit.*y*; mon.*ey*

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*. This principle was designated as Principle V.

Examples: *ball*; *paw*

VI. When there are two adjacent vowels in a syllable, the first vowel has its own "long" sound and the second vowel is silent. (Vowel digraph, Type A) This principle was designated as Principle VI.

Examples: *coat*; *feed*

Note: The vowel digraphs were divided into four groups.

In Type A the first vowel has its own "long" sound and the second vowel is silent (e.g., *beat*, *meat*).

In Type B the first vowel is silent and the second vowel has its own "long" sound (e.g., *field*, *great*).

In Type C neither vowel has its "long" sound (e.g., *said*, *good*) and

in Type D the sound of the vowel digraph is modified by the letter *r* which follows it (e.g., *hair*, *dear*).

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. This principle was designated as Principle VII.

Examples: *ta.ble*; *gen.tle*

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. This principle was designated as Principle VIII.

Examples: *sud.den*; *kit.ten*

Since it appeared that many of the vowel situations were exceptions to the various phonic principles, it was deemed advisable to investigate the applicability of each principle. Tabulations were made of the incidence of applications and exceptions.

Two additional factors which influenced the pronunciation of the vowels were investigated. These were the vowel situations in unstressed syllables, and the "silent" vowels.

There has been a tendency to regard the sound of a vowel in an unstressed syllable as being the same as the sound of this vowel in a stressed syllable. For example, attempts have been made to apply Principle II to the first syllable of a word such as *began*, by saying that the *e* in this word has its "long" sound. While it is true that the first syllable, *be*, does end with a vowel sound and is, therefore, open, the vowel sound is that of an unstressed *e*, not of "long" *e*. The sound is indicated in the respelling of the word by a modified macron rather than by a macron, alone, which is used to indicate a "long" sound of a vowel.

In order to determine how many of these situations exist in a primary reading vocabulary, and at what reader-levels they may be found, a separate tabulation was made.

Of the 3,022 vowel situations which were tabulated, 2,455 embraced "sounded" vowels. The remaining 567 situations embraced "silent" vowels.

Summary

1. A diversity of types of vowel situations was identified in the vocabularies of basal readers designed for use in the primary grades. They included single vowel letters, vowel digraphs, vowel trigraphs, and diphthongs in their syllabic settings.
 - a. The highest percentage of different vowel situations, 35 per cent, was introduced at the primer level. The percentages for the other reader levels follow: First-reader, 21 per cent; second-reader, 28 per cent; and third-reader, 16 per cent.
 - b. Outstanding among both the *different* and the *total* vowel situations were those embracing "vowel-before-*r*," "long," "short," and "silent" vowel letters, and vowel digraphs, type C.

On the basis of frequency of occurrence (incidence), the vowel situations can be ranked in the following order of descending value:

- | | |
|---|--|
| <p>(1) Primer level</p> <p>(a) <i>Different</i> vowel situations:</p> <ol style="list-style-type: none"> 1) "Long" vowels 2) "Short" vowels 3) Vowels-before-<i>r</i> 4) "Silent" vowels 5) Vowel digraphs, type C <p>(b) <i>Total</i> vowel situations:</p> <ol style="list-style-type: none"> 1) "Short" vowels 2) "Long" vowels 3) "Silent" vowels 4) Vowels-before-<i>r</i> 5) Vowel digraphs, type C <p>(2) First-reader level</p> <p>(a) <i>Different</i> vowel situations:</p> <ol style="list-style-type: none"> 1) Vowels-before-<i>r</i> 2) "Long" vowels 3) "Silent" vowels 4) Vowel digraphs, type C 5) "Short" vowels <p>(b) <i>Total</i> vowel situations:</p> <ol style="list-style-type: none"> 1) "Short" vowels 2) "Long" vowels 3) "Silent" vowels 4) Vowels-before-<i>r</i> 5) Vowel digraphs, type C | <p>(3) Second-reader level</p> <p>(a) <i>Different</i> vowel situations:</p> <ol style="list-style-type: none"> 1) Vowels-before-<i>r</i> 2) "long" vowels 3) "Silent" vowels 4) Vowel digraphs, type C 5) "Short" vowels <p>(b) <i>Total</i> vowel situations:</p> <ol style="list-style-type: none"> 1) "Short" vowels 2) "Silent" vowels 3) "Long" vowels 4) Vowels-before-<i>r</i> 5) Vowel digraphs, type C <p>(4) Third-reader level</p> <p>(a) <i>Different</i> vowel situations:</p> <ol style="list-style-type: none"> 1) Vowels-before-<i>r</i> 2) "Long" vowels 3) Vowel digraphs, type C 4) "Silent" vowels 5) "Short" vowels <p>(b) <i>Total</i> vowel situations:</p> <ol style="list-style-type: none"> 1) "Short" vowels 2) "Long" vowels 3) "Silent" vowels 4) Vowels-before-<i>r</i> 5) Vowel digraphs, type C |
|---|--|

Among the remaining types of vowel situations, no one was outstanding because the percentage of both *different* and *total* vowel situations was low.

None accounted for more than 5 per cent of the totals.

2. The eight principles which were identified as basic to the pronunciation of the vowel letters embraced the following situations:

- A syllable containing more than one vowel letter and ending in *e*
- An open, accented syllable
- A closed, accented syllable
- A final syllable in a word ending with *y*
- A syllable containing the letter *a* before the letters *l* or *w*
- A syllable containing a vowel digraph
- A final syllable ending in the letters *le*
- A final syllable ending in the letters *en*

a. On the basis of percentages of *application*, the phonic principles, for which there are applications, can be ranked in the following order of descending value

- | | |
|---|---|
| <p>(1) Primer level:</p> <ol style="list-style-type: none"> (a) Principles IV, V, and VII (100 per cent) (b) Principle III (74 per cent) (c) Principle II (71 per cent) (d) Principle I (53 per cent) | <p>(e) Principle VI (50 per cent)</p> <p>(2) First-reader level:</p> <ol style="list-style-type: none"> (a) Principles IV, VII, and VIII (100 per cent) (b) Principle V (86 per cent) (c) Principle II (81 per cent) |
|---|---|

- (d) Principle III (69 per cent)
- (e) Principle I (56 per cent)
- (f) Principle VI (49 per cent)
- (3) Second-reader level:
 - (a) Principles IV, VII, and VIII (100 per cent)
 - (b) Principle V (96 per cent)
 - (c) Principle II (85 per cent)
 - (d) Principle I (67 per cent)
- (e) Principle III (66 per cent)
- (f) Principle VI (47 per cent)
- (4) Third-reader level:
 - (a) Principles IV, VII, and VIII (100 per cent)
 - (b) Principle V (95 per cent)
 - (c) Principle II (89 per cent)
 - (d) Principle I (71 per cent)
 - (e) Principle III (70 per cent)
 - (f) Principle VI (51 per cent)

b. On the basis of percentages of *exceptions*, the phonic principles can be ranked in the following order of *ascending* value:

- (1) Primer level:
 - (a) Principle III (26 per cent)
 - (b) Principle II (29 per cent)
 - (c) Principle I (47 per cent)
 - (d) Principle VI (50 per cent)
- (2) First-reader level:
 - (a) Principle V (14 per cent)
 - (b) Principle II (19 per cent)
 - (c) Principle III (31 per cent)
 - (d) Principle I (44 per cent)
 - (e) Principle VI (51 per cent)
- (3) Second-reader level:
 - (a) Principle V (4 per cent)
 - (b) Principle II (15 per cent)
 - (c) Principle I (33 per cent)
 - (d) Principle III (34 per cent)
 - (e) Principle VI (53 per cent)
- (4) Third-reader level:
 - (a) Principle V (5 per cent)
 - (b) Principle II (11 per cent)
 - (c) Principle I (29 per cent)
 - (d) Principle III (30 per cent)
 - (e) Principle VI (49 per cent)

3. Two additional factors were identified as warranting consideration in the pronunciation of the vowels: (1) Vowel letters in unstressed syllables and (2) "silent" vowel letters. Among the total vowel situations, 67 per cent were found in stressed syllables; 14 per cent in unstressed syllables. "Silent" vowel letters accounted for 19 per cent of the total situations.

a. On the basis of frequency of occurrence, the vowel letters in unstressed syllables can be ranked in the following order of descending value:

- (1) Primer level:
 - (a) *Different* vowel situations:
 - 1) Vowel letter *e*
 - 2) Vowel letters *a, i, o,* and *y*
 - (b) *Total* vowel situations:
 - 1) Vowel letter *e*
 - 2) Vowel letters *a, i, o,* and *y*
- (2) First-reader level:
 - (a) *Different* vowel situations:
 - 1) Vowel letter *e*
 - 2) Vowel letter *y*
 - 3) Vowel letter *a*
 - 4) Vowel letter *i*
 - 5) Vowel letter *o*
 - 6) Vowel letter *u*
 - (b) *Total* vowel situations:
 - 1) Vowel letter *e*
 - 2) Vowel letter *y*
 - 3) Vowel letter *a*
 - 4) Vowel letter *i*
 - 5) Vowel letter *o*
 - 6) Vowel letter *u*
- (3) Second-reader level:
 - (a) *Different* vowel situations:
 - 1) Vowel letter *o*
 - 2) Vowel letters *a, e,* and *u*
 - 3) Vowel letter *i*
 - 4) Vowel digraphs, type C
 - (b) *Total* vowel situations:
 - 1) Vowel letter *e*
 - 2) Vowel letter *y*
 - 3) Vowel letter *a*
 - 4) Vowel letter *i*
 - 5) Vowel letter *o*
 - 6) Vowel letter *u*
 - 7) Vowel digraphs, type C

- (4) Third-reader level:
- (a) *Different* vowel situations:
- 1) Vowel letter *o*
 - 2) Vowel letter *a*
 - 3) Vowel letters *e* and *u*
 - 4) Vowel digraphs, type C
 - 5) Vowel letter *i*
 - 6) Vowel letter *y*
- (b) *Total* vowel situations:
- 1) Vowel letter *e*
 - 2) Vowel letter *y*
 - 3) Vowel letter *a*
 - 4) Vowel letter *i*
 - 5) Vowel letter *o*
 - 6) Vowel letter *u*
 - 7) Vowel digraphs, type C
- b. On the basis of frequency of occurrence, the "silent" vowel letters can be ranked in the following order of descending value:
- (1) Primer level:
- (a) *Different* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letters *a* and *y*
- (b) *Total* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letter *y*
 - 3) "Silent" letter *a*
- (2) First-reader level:
- (a) *Different* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letter *a*
 - 3) "Silent" letters *i*, *u*, and *y*
- (b) *Total* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letter *y*
 - 3) "Silent" letter *a*
 - 4) "Silent" letter *i*
 - 5) "Silent" letter *u*
- (3) Second-reader level
- (a) *Different* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letter *i*
 - 3) "Silent" letter *a*
 - 4) "Silent" letters *o*, *u*, and *y*
- (b) *Total* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letter *a*
 - 3) "Silent" letter *y*
 - 4) "Silent" letter *i*
 - 5) "Silent" letters *o* and *u*
- (4) Third-reader level:
- (a) *Different* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letter *i*
 - 3) "Silent" letters *a* and *u*
 - 4) "Silent" letters *o* and *y*
- (b) *Total* vowel situations:
- 1) "Silent" letter *e*
 - 2) "Silent" letter *a*
 - 3) "Silent" letter *i*
 - 4) "Silent" letter *y*
 - 5) "Silent" letter *u*
 - 6) "Silent" letter *o*

Conclusions

Within the limitations of the data presented, the following conclusions appear to be valid

1. A relatively large number of *different* vowel situations is embraced by the vocabularies of primary readers.
 - a. The highest percentage of *different* vowel situations was introduced at the primer level; the lowest percentage at the third-reader level.
 - b. Five types of vowel situations accounted for approximately 70 per cent of the *different* vowel situations in the selected vocabulary. They also accounted for 80 per cent or more of the *total* vowel situations. The remaining types of situations were characterized by relatively low percentages of both *different* and *total* vowel situations.
2. Eight vowel principles, basic to the pronunciation of the vowel letters in the vocabulary, were identified. They operated as applications or exceptions in approximately 70 per cent of the *total* vowel situations.
 - a. The vowel principles were *applicable* in approximately 50 per cent of the total vowel situations. In general, the principles with high percentages of application represented a

- relatively small number of vowel situations. Each principle was applicable in at least 47 per cent of the situations covered by that principle.
- b. The exceptions to the principles occurred in approximately 25 per cent of the total vowel situations. For three of the principles, no exceptions were identified. In general, the percentages of exception for each of the principles were less than those of application.
3. Two additional factors which operate in the pronunciation of the vowels embraced vowel situations in unstressed syllables and "silent" vowel letter situations.
- a. Unstressed syllables:
 - (1) The percentages of vowels in unstressed syllables averaged about 15 per cent and never exceeded 20 per cent of the *different* vowel situations.
 - (2) The percentages of vowels in unstressed syllables likewise amounted to approximately 16 per of the *total* vowel situations.
 - b. "Silent" vowel letters:
 - (1) Among the *different* vowel letter situations, approximately 10 per cent were identified as "silent" vowel letters.
 - (2) Among the *total* vowel letter situations, "silent" vowel letters occurred in almost 20 per cent of the situations.

Implications

The diversity of vowel situations calls for an increased awareness on the part of the teacher of the wide range of vowel sounds which primary children are expected to hear and to associate with printed symbol. Since one-third of the vowel situations make their first appearance at the primer level, children will have to deal with these situations early in their reading experiences. Guidance in auditory discrimination from the very beginning of the reading program is indicated. This guidance should be continued as needed after the introduction of the visual-auditory discrimination (phonetic analysis) program.

In helping the reader to make visual-auditory discriminations, the teacher should note that certain types of vowel situations occur more frequently than others; that certain phonic principles are more useful than others; and that additional factors exist which influence the pronunciation of the vowels. Within the limitations of this study, it appears possible to indicate the reader-level at which each of these situations could be introduced with the greatest economy and profit. It also appears possible to predict which phonic principles will be most useful and at what reader-level they will first be of most use. The following outline is an attempt to interpret the data obtained in this study in line with the above.

1. *Types of vowel situations.* Eight appearances have been arbitrarily chosen as the minimum number necessary for deciding upon the level at which to introduce a vowel situation. In some instances, however, the percentage of exceptions to the principle governing a particular vowel situation is sufficiently high to cancel the benefit derived from frequent use. Suggestions for the introduction of the different vowel situations are made with these criteria in mind as a basis.
 - a. *"Short" vowels.* Situations embracing "short" vowel letters are frequent at every reader-level. They could be introduced in the following order:
 - (1) At the primer level: *"Short" i and a*
 - (2) At the first-reader level: *"Short" e, o, u, and y*
 - b. *"Long" vowels.* The three types of "long" vowels vary as to frequency of *total* vowel situations at certain reader-levels. This will affect the time at which they could be introduced. The data seem to indicate the following order:
 - (1) At the second-reader level:
 - (a) The vowel letters *a, i, and o* which are affected by the final *e* in a syllable
 - (b) The vowel letters *e, o, and y* in open syllables.
 - (2) At the third-reader level:

- (a) The vowel letter *e* which is affected by the final *e* in a syllable.
- (b) The vowel letter *a* in an open syllable
- (3) To be postponed:
 - (a) The vowel letter *u* which is affected by the final *e* in a syllable
 - (b) The letters *i* and *u* in open syllables
 - (c) Vowel digraphs, type A
- c. "Silent" Vowels. These situations are characterized by very low frequencies. The data seem to indicate the following order of presentation
 - (1) At the second-reader level:
 - (a) "Silent" vowel letters *a*, *e*, and *y* in vowel digraphs, type A
 - (b) "Silent" *e*, appearing as final *e* in stressed syllables
 - (2) At the third-reader level:
 - (a) "Silent" vowel letter *i* in vowel digraphs, type A
 - (b) "Silent" *e*, appearing as final *e* in unstressed syllables
 - (c) "Silent" *e* in syllabic "l" situations
 - (3) To be postponed: The "silent" letters *o* and *u*
- d. *Vowels-before-r*. These situations are also characterized by low frequencies at the primer and first-reader levels. The following order of introduction seems to be indicated:
 - (1) At the first-reader level: Vowel *e* before *r* in unstressed syllables (e.g., *mother*, *letter*)
 - (2) At the second-reader level: Vowel *a* before *r* in stressed syllables (e.g., *arm*, *bark*)
 - (3) At the third-reader level: Vowels *i* and *o* before *r* in stressed syllables (e.g., *girl*, *bird*, *for*, *horse*)
 - (4) To be postponed: Vowel *u* before *r* in both stressed and unstressed syllables
- e. *Diphthongs*. Of the five types of diphthongs identified in the vocabulary, only two have sufficient incidence to be included for introduction in the primary reading program. Data on this introduction follow:
 - (1) At the second-reader level: Diphthongs *ou* as in *house* and *ow* as in *brown*
 - (2) To be postponed: Diphthongs *oy* as in *boy*, *ew* as in *few*, and *oi* as in *noise*
- f. *Unclassified vowel letters*. A few additional vowel letters with varying diacritical markings appeared frequently enough to be presented here according to reader-level of introduction
 - (1) At the second-reader level:
 - (a) Vowel *a* as in *fast*
 - (b) Vowel *a* as in *fall*
 - (c) Vowel *a* as in *about*
 - (d) Vowel *e* as in *basket*
 - (e) Vowel *e* as in *began*
 - (f) Vowel *i* as in *bright*
 - (g) Vowel *o* as in *both*
 - (h) Vowel *o* as in *cloth*
 - (i) Vowel *o* as in *mother*
 - (2) At the third-reader level:
 - Vowel *a* as in *Indian*

2. The usefulness of the phonic principles in teaching the different sounds for the vowels letters is limited by the number of applications and exceptions for each principle. The data seem to indicate that the principles could be introduced in the following order:

- a. At primer level: Principle III, embracing "short" vowel sounds
- b. At second-reader level:
 - (1) Principle I, embracing "long" vowels in syllables containing more than one vowel and ending in *e*
 - (2) Principle II, embracing "long" vowels in open syllables
 - (3) Principle IV, embracing the final *y* in words of more than one syllable
 - (4) Principle V, embracing the letter *a* before the letters *l* or *w*
- c. At third-reader level: Principle VII, embracing syllabic "l" situations
- d. To be postponed:
 - (1) Principle VI, embracing vowel digraphs
 - (2) Principle VIII, embracing syllabic "n" situations

3. The introduction of the vowel situations in unstressed syllables and the "silent" vowel letter situations has already been taken care of in the preceding suggestions. Very few of these situations show sufficient frequency to be emphasized in the primary reading program. Their appearance in the primary vocabulary, however, does have implications for the teacher in that they present additional problems in word recognition which cannot be ignored.

Summary.

According to the data obtained in this study, the program of instruction which embraces vowel situations would probably follow this sequence: At the primer level, "short" vowels would be introduced; at the first-reader level, the remaining "short" vowels, and vowel *e* before *r* as in *mother*; at the second-reader level, "long" vowels, "silent" vowels, vowel *a* before *r* as in *arm*, diphthongs, and a group of nine unclassified vowel letters with varied diacritical markings; at the third-reader level, additional "long" vowels, "silent" vowels, vowels-before-*r*, and one new unclassified vowel letter. Each vowel situation which is introduced is carried over into the succeeding reader levels.

The sequence for the introduction of the phonic principles would be: At the primer level, Principle III; at the second-reader level, Principles I, II, IV, and V; and at the third-reader level, Principle VII. Because of the high percentages of exceptions, Principle VI is not listed; and because of low frequencies, Principle VIII is likewise eliminated.

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5. Perceptual Learning: Phonics Countdown, by Emmett Albert Betts, Ph.D., LL.D.*

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The phonics countdown, developed in the Reading Research Lab, Univ. of Miami, Fla., is one, but only one method for teaching the pupil how to decode writing. It is used with monosyllables (e.g., *big* or *made*) and with the stressed syllables of words (e.g., the *happ* of *happy* and the *can* of *candy*).

Procedure: Long Countdown

The phonics countdown is a simple procedure for teaching pupils to study (1) *pronounceable* parts of a word, or a stressed syllable, and (2) the relation of the word form to a "life" meaning:

1. "What animal do you see?" (A cat) (A picture of a cat)
2. "What is the first word?" /'kat/ cat
3. "Look at the second word. Say aloud the part that is printed in black letters." /'at/ (c)at*
4. "Look at the third word. Say aloud the part printed in black letters." ca(t)*
5. "Look at the next word. Say the part printed in black." /'a/ (c)a(t)*

*The letters in parentheses appear in color in the pupil's book or on the chalk board.

6. "What is the sound for the letter *a* in the word *cat*?" /'a/
7. "What is the last word?" /'kat/
8. "Finish this sentence: A cat is _____."
(Optional: an animal, pretty, a nice pet, etc.)
"Finish this sentence: A cat likes to _____."
(Optional: play with yarn, sleep, etc.)
"How many kinds of cats can you name?"

The emphasis, in this approach to the systematic study of one-syllable words or the stressed syllable of a word, is on *pronounceable parts*. A pronounceable part may be:

- (1) the *ca* of *cat*, or the *plea* of *please*;
- (2) the *a* of *cat* or the *ea* of *please*;
- (3) the *at* of *cat* or the *ease* of *please*.

At no time are consonants pronounced in isolation from vowels because they need to be blended with succeeding vowels (e.g., *shar* of *sharp*) or preceding vowels (e.g., *arp* of *sharp*). This use of pronounceable units eliminates a profusion of confusion induced by requiring the learner to say /puh/ and /tuh/ for the p and t of *pat*, producing the nonsense word /puh-a-tuh/. (Unfortunately, this procedure seems to be somewhat commonplace in too many classrooms).

Phonic countdowns are used on consistently spelled words and stressed syllables (e.g., *tap* /tap/ rather than *was* /wəz/. (Other procedures, to be discussed in succeeding publications, are used with the host of irregularly spelled words, such as *of* /ov/, *come* /kəm/, and *who* /hü/.)

The same procedure is used with other categories of words:

came	goat	round	girl	work	park
(c)ame	(g)oat	(r)ound	(g)irl	(w)ork	(p)ark
ca(me)	goa(t)	rou(nd)	gir(l)	wor(k)	par(k)
c(a)me	g(oa)t	r(ou)nd	(g)ir(l)	(w)or(k)	(p)ar(k)
came	goat	round	girl	work	park

Note: the phonograms in parentheses in each word are printed in color in textbooks so that the pupil sees the word as a whole but pronounces only the part in black.

Crucial to the use of the phonics countdown are several considerations

1. Vowel-consonant Blend

When pupils are ready for beginning reading instruction, they can use free association to recall words that rhyme with a word; e.g., at: *cat-hat-sat*. Hence, the pupils are taken from the whole word to its rhyming part because this is an easy initial step in studying the structure of the word.

The first purpose of these activities is to make the pupil aware of the patterns of sounds he uses-not to teach the pupil the sounds he already uses automatically in his speech activities.

The second purpose is to teach the pupils the relationship between the sound pattern and the letter pattern; e.g., the rhyme /'at/ of /kat/ and the spelling *at* of *cat*.

2. Consonant-vowel Blend

The next step in studying the structure of the word is the consonant-vowel blend, as *ra* of *rat*. After the pupils are introduced to 3 to 5 situations – e.g., *cat, bat, bat, rat, ran* – they learn that the first parts, *ca, ba, ha, ra*, rhyme.

"When the pupils have accumulated a small vocabulary, they will generalize that the same consonant-vowel blend in the same pattern represents the same sounds; e.g., the *ca* for /ka/ in *cap-can* of the (C)VC, or (consonant),vowel-consonant pattern as in *at* and *hat* pattern. At this point, they may be taught the following generalization: "The words *cat* and *cap* have the same first sounds: /'ka/. "What other words begin with the first sounds /ka/ as *cat* and *cap*?" (E.g., *can, cab, calf, camp, cash, cast, catch*). Or, "Which of these three words have the same first sound /'ka/? : *cat, bat, can*" Or, *fat, cat, cab*. Or, *pat, cat, call*.

"What is the first part of *cat, cap, can*?" /'ka/ ""What is the first part of *cat, cab, calf*?" /'ka/ "What is the first part of *cat, camp, catch*?" /ka/

3. The Vowel Sound

In beginning reading, the pupil is introduced to the (C)VC spelling patterns, as in *rat, pig, bug, not, get*. In these patterns, the vowel sounds are contrastive and, therefore, can be discriminated easily. Furthermore, the pupils learn one specific spelling pattern (e.g., the sub-pattern *cat-ran*) before being introduced to another spelling sub-pattern (e.g., *big-pig-hit, bug-rug, not-got, get-let*).

Follow-up activities after the introduction of each specific pattern may reinforce the association of vowel sounds with the letters representing them:

"The words *cat, pan, sad* have the same middle sound. "What is it?" /a/

"The words *cat, man, nap* have the same middle sound. "What is it?" /a/

"The words *cat, sad, rag* have the same middle sound. "What is it?" /a/

"The words *cat, ham, lap* have the same middle sound. "What is it?" /a/

After two specific spelling patterns have been introduced, the pupils may profit from activities in which they discriminate between contrastive sounds:

Say: "Listen to the middle sound of these words to decide whether they are the same or different: *cat-ham, cat-cut, cat-cake, cat-cot, cat-bag, cat-set, cat-lap.*" Say one pair of words at a time and have the pupils say each pair as they listen to the middle sound. Then, have them decide whether the middle sounds are the same or different.

The purpose of the last activity above is to teach the pupil to hear sounds he uses automatically, not to teach him to say the sounds, which he can do before he enters into beginning reading activities.

4. Consonant Boundaries: First Consonants

The total sound pattern of /kat/ is initiated with the consonant /k/ and terminated with the consonant /t/. For the beginner, the awareness of all three sounds /k/, /a/, and /t/ is a set of new learnings. The vowel is the nucleus of the syllable, but consonants are the margins, or boundaries, of the syllable and, therefore, equally important.

As a follow-up to the first countdown for *cat*, alert the pupils to the first sound /k/:

Say: "The words *cat* and *can* begin with the same first sound. Listen to the first sound of *cat* and *can* as you say them."

"Say some other words that begin with the same first sound." Pupils may respond with *cab, cake, call, camel, keep, key, kick, kind.*

To teach pupils to discriminate between contrastive first consonants, say: "Say *cat* and *bat* and listen to their first sounds. Are they the same or different?" Use other pairs: *cat-sat, cat-hat, cat-cab, cat-rat, cat-cap, cat-bat, cat-catch.*

It should be noted that neither the teacher nor the pupils say the name of the letter k /'kā/ or the sound /k/. At this point, attention is directed to *hearing* the sound /k/ in the *whole word* *cat* /'kat/ and to saying the sound /k/ in the *whole word* (syllable) *cat*.

5. Consonant Boundaries – Last Consonants

The first four patterned words end with consonant *t* /t/: *cat, bat, hat, rat*. The next two patterned words end with consonant *n* /n/: *ran, can*. As the pupil's vocabulary develops; additional consonant letters are introduced. But in each new word, only *one* new consonant letter, as a new learning, is presented – either a first or a last consonant, depending on the sequence of new words in beginning reading materials.

Caveat: It will be noted that neither the pupil nor the teacher says either the names of the consonant letters or the sound of the isolated consonants. The sounds of the whole word *cat* are /'kat/, not the names of the letters. Furthermore, some experienced teachers may be able to say the sound /k/ in isolation, but the sound is often distorted by adding a vowel sound such as schwa: /'ka/. Another plosive, or stop, sound /t/ is distorted into /'tə/ when it is said in isolation. The word is the one-syllable /'kat/, not the two-syllable /'ka'tə/ or the three-syllable /'ka-'a-'tə/

Follow-up on a countdown activity may be used to reinforce auditory discrimination and letter-sound associations: Say: "Say *cat-hot* and listen to the last sounds. Are they the same or different?" Use other pairs: *cat-jam, cat-nut, cat-run, cat-pig, cat-not.*

To further point up the sound /t/, have the pupils say pairs of words that have vowel sounds other than /a/ and decide if the last sounds are the same or different: *got-pet, rut-pot, lot-pin, sun-sit, him-cut, hit-hot, pig-rot*. Avoid using the cognates /d/ and /t/, as the final sounds in word pairs – because these sounds are too close on the sound spectrum-until the pupils can discriminate between highly contrasted sounds, such as /d/ and /s/.

6. Consonants: Elementary Sounds and Blends

In beginning reading, the pupils first learn the relations between single consonant letters (e.g., *c* and *t* of *cat* and *r* and *n* of *ran*) and elementary sounds (e.g., /k/ and /t/ of /'kat/, /r/ and /n/ of /ran/). Then they are introduced to consonant blends of sounds previously studied; e.g., the *nd* of *and* and *band*.

With the exception of function words (e.g., *a, and*), the first words introduced are within the same spelling pattern: *cat, bat, rat*. For example, the next word may be *bat*, with only one new element added: *b* /b/. Since the pupils have had only one previous experience with this pattern – the word *cat* – they cannot generalize, or discover the alphabetic principle, until they have studied two or more words in that pattern.

New words introduced are within the same specific spelling pattern: *cat, bat*. For example, *bat*, presenting the new element *b* /b/ and *rat*, representing the new element *r* /r/, introduce one new learning at a time. For the first words, care is exercised (1) to select words in which the consonant is represented by one letter (e.g., *hat* rather than *what* or *that*) and (2) to develop the relationship between the sound and the letter representing it. Soon the pupils are able to generalize regarding the *cat-hat-bat* spelling pattern.

This (C)VC generalization is extended for this pattern by using words with *contrasting* final consonants: *cap-can, map-man*. But again, it will be noted that each of the consonant boundaries – first and last – is systematically and painstakingly developed, because each consonant sound and letter is a new learning.

After the pupils have had experience with *sat* and *bad* and similar words, they are in a position to apply their perception skills to *sad*. Or, experience with *ran* and *hat*, for example, makes possible the application of the pattern to *rat*. Or, experience with *cat* and *ran* can be used to identify *can*. Digraphs – two letters representing a single sound, as: in (th)e, du(ck), si(ng), (wh)o – are distributed parsimoniously and developed carefully.

7. Use of Terms: Vowel and Consonant

In beginning reading, one of the major emphases is on decoding writing – relating a sequence of sounds in a spoken word to the sequence of letters in a written word. This major learning is a big order for beginners; hence using the terms *vowel* and *consonant* is not recommended. However, some teachers may be more comfortable if they opt to do so.

8. Function Words

Function words – e.g., *a, and* – tend to be unstressed and shortened in the phases of conversational speech – the norm for oral reading. The word *a* becomes unstressed /ə/, not stressed /'a/, as in a *cat*. The word *and* becomes unstressed /ənd/ or /ən/, not stressed /'and/.

Learning *phrase* stress as well as *syllable* stress is crucial for beginning readers. This learning promotes rhythmical rather than word-by-word reading. For this reason, the function word *a* is usually introduced in the first activity and the function word *and* soon thereafter. Later, function words are distributed as needed in order to take advantage of the pupil's normal intonation patterns, learned before he is ready for beginning reading.

9 Irregularly Spelled Words

Pupil confidence in word-perception skills is developed through an emphasis on *regularly* spelled words; e.g., *cat* and *sat*. This confidence is reinforced by the simple device of respelling irregularly spelled words, *using letter-sound relationships previously learned*. The word *have*, for example, is presented as *have* (hav), as a self-help aid.

Although a significant number of commonly used words in speaking and writing have consistent spellings for speech sounds, too many crucial words are irregularly spelled. Fortunately, however, dictionary respellings for many of these words are with the *at-bet-did-not-but* spelling patterns learned early in beginning reading. Hence, these types of respellings permit rapid perception:

<i>Word</i>	<i>Respelling</i> (Self-help aid)
one	(wun)
what	(hwot)
come	(kum)
from	(frum)
some	(sum)
laugh	(laf)
of	(uv)

This plan has these distinctive advantages:

1. The pupil always is dealing with known elements. For example, the respellings are all within the *hat-get-but-got-run* spelling sub-patterns which he has learned – or, perhaps, overlearned.
2. The pupil achieves independence because the special respellings – e.g., *laugh* (laf) – are available as a selfhelp aid at the moment he needs the help.
3. The pupil gradually learns that different spellings (letters) may be used for the same sound, as *f* in *if* and *gh* in *laugh*.
4. The pupil becomes acutely aware of the sounds he uses automatically in speech and relates them to spellings. That is, he learns inductively the alphabetic principle on which traditional orthography is based.

10. Two-syllable Words

One of the crucial factors in word perception is grouping in pronounceable units as the *fa* or *at* in *fat* or the *Bobb* in *Bobby*.

First, the pupils learn through the phonics countdown that the parts of one-syllable words are grouped. For example, the letters of the word *hat* may be grouped as *ha* or *at* to preserve valid consonant-vowel and vowel-consonant relationships: The word *plant* may be grouped as *pla* or *ant*. Furthermore, the *pl* and *nt* of *plant* are subgroups: for consonant sounds, which are not said in isolation.

Second, the pupils learn that letters and the sounds they represent may be grouped by syllables. In beginning reading, two-syllable words have relatively simple syllabic division in *better* (bett-er), *penny* (penn-y), *candy* (can-dy), *mother* (moth-er), and *father* (fath-er).

That is, special syllabication situations do not occur until the pupil has mastered the less complex ones. The syllabic division between vowels, as in *giant* /'ji-ant/, is one special situation. The syllabic division represented by the spelling *ng* as in *longer* /'long-gar/, is another.

Pupil confidence derived from success with one-syllable words is *reinforced* through the simple device of showing the syllabic division of the word in terms of *traditional* spelling. Hence, the syllables of the word *pretty* are shown as (prett-y), not as a dictionary respelling /'prit-E/ or as a dictionary entry.

This plan has several distinctive advantages:

- a. The pupil learns how to syllabicate the traditional spelling of a word – what he sees when he reads.
- b. The pupil achieves an awareness of the double consonant at the end of a syllable which often signals a "short" vowel sound, as in *kitten* (kitt-en) /'kit-n/.
- c. The pupil learns early to apply one-syllable phonic skills to the stressed syllables of two-syllable words, as in *Randy* (Randy) /'ran-de/. That is, he makes a gradual transition to syllable phonics, applying what he already knows.
- d. Pupil *motivation* is significantly increased through his understanding of how to group parts of whole words to identify them; e.g., the *thi* or *ink* of *think* or the *Jimm* and *y* of *Jimmy*.
- e. Pupil motivation is enhanced through his increasing awareness of what he knows about word perception and about the *application* of his skills to new words.
- f. Pupil motivation is given a big boost through the development of positive attitudes toward word perception; e.g., automatically looking for the parts he *knows* as cues to the word.
- g. Pupil motivation is further advanced by learning *how* to learn; e.g., by grouping word parts into functional units (as *happ-y* in *happy*) and automatically checking to see if the word makes sense in its sentence – using semantic-syntactic-pragmatic types of context clues.

11. Variant Spelling

A variant spelling of a word is one of two or more appropriate or correct spellings listed in current and reputable dictionaries. The word *rime* is entered in Webster's *New Elementary Dictionary* (1970) as: *rime* var. of RHYME. Which spelling is used is a matter of personal choice.

To develop pupil confidence and to reinforce his word perception skills for the *like-ride-time* pattern, the variant spelling *rime* is introduced with the word *time*. The optimal, or variant, spelling of *rime* as *rhyme* is introduced later, when the pupil achieves a higher level of competence in both word perception and spelling.

Short Phonics Countdown

A short phonics countdown is used to save time and to teach application of skills:

1. After the pupils (a) have had a long countdown on three to five words within a given specific spelling pattern, and (b) know the consonant boundaries of the new words; e.g., *cat-hat-cap*, *bet-leg-wet*, *bake-make-came*, *out-loud-ground*

hill	(p)ill	make	(m)ake
(h)ill*	pill	(m)ake	cake

*Letters in parentheses appear in color in the pupil's study book or on the chalk board.

2. After the pupils have learned two contrasting spelling patterns; e.g., *hid-big-did* versus *hide-like-ride*. In this instance the spelling pattern of *hid-hide* may be contrasted for cues to the vowel sound.

hid	mad
hide	made

3. After analogous final vowel-consonant blends have been learned; e.g.,

box	park	round
(b)ox	(p)ark	(r)ound
(f)ox	(l)ark	(s)ound
fox	lark	sound

4. After analogous initial consonant-vowel blends have been learned; e.g., *be* of *beg* and *bet*

bad	had	thing
ba(d)	ha(d)	thi(ng)
ba(g)	ha(s)	thi(nk)
bag	has	think

To use this countdown, the final consonants have been learned in relation to other words.

5. After three to five words, a limited category of spelling patterns have been learned; e.g., *he*, *may*, *no*

he	may	no
(h)e	(m)ay	(n)o
(m)e	(s)ay	(g)o
me	say	go

To use this countdown, the initial consonants have been learned in relation to other words.

Analogies between words are used in an increasing number of situations in which the pupil contrasts and compares minimal pairs, as for example

hot	he	me	car	feed
got	me	she	tar	feel

This is primarily an application procedure.

Vowel plus r -

As the pupil progresses in his reading, he meets an increasing number of vowel plus *r* situations, as in *her-bird-work*, *water-color*, *air-where*, etc. In some of the situations, the spellings represent an elementary sound (e.g., the /ər/ of *first*, *her*); in others, the spellings represent diphthongs (e.g., the /ɛr/ *far*). Furthermore, regional differences in speech complicate the situation. To reduce this situation to a manageable one for beginners, all vowel *plus r* situations (1) are presented as phonograms and (2) are taught as cue and probability learnings. (See E. A. Betts "Graphic R", *Spelling Progress Bulletin*, Winter, 1979.)

The vowel plus *r* is a stressed elementary sound /ər/ in *bird*, *her*, *worm*, etc. Hence, the *ir* or *er* represents the vowel sound and is taught as a consonant-vowel blend *bir* and as a vowel-consonant blend *ird* in the phonics countdown on *bird*.

bird	(b)ir(d)
(b)ird	bird
bir(d)	

The vowel plus *r* is an unstressed elementary speech sound /ər/ (syllable) in *better* (bett-er), *color* (col-or), *water* (wat-er). Since it is unstressed, a phonics countdown is not used.

In other vowel plus *r* situations, the vowel plus *r* is taught as a phonogram, as in *far-cart-dark*, *for*, *there-where*. That is, the phonics countdown is:

dark	dark(k)
(d)ark	dark

Stressed Syllables

At first, only two-syllable words in which the first syllable is stressed are taught. Furthermore, the first, or stressed, syllable is a previously taught word, as *can* in *candy* (can-dy), *Bob* in *Bobby* (Bobb-y), and *bet* in *better* (be tt-er).

As for the phonics countdowns on monosyllables, the countdown for disyllables is introduced and terminated with a consideration of the *referential* meaning of the word.

A long countdown is made on the first few two-syllable words, as for *little* (litt-le)

little	(l)i(ttle)
(l)itt(le)*	litt(le) little

*Letters in parentheses appear in color in the pupil's study book or on the chalk board.

As the pupils' understandings of word structure are increased, the countdowns are shortened:

can	bet	fun
can(dy)	bett(er)	funn(y)
candy	better	funny

Later, two-syllable words in which the second syllable is stressed are taught. Moreover, the second, or stressed, syllable has been taught as a word; e.g., *around*, *away*:

round	way
(a)round	(a)way
around	away

The use of the phonics countdown on stressed syllables teaches the pupils (1) *how* to apply their phonic skills to stressed syllables, and (2) *a set* for seeing and hearing syllables.

The countdown is limited to the stressed syllables for these reasons: first, when a syllable is said in isolation from the word, it is automatically stressed, because stress is a relative phenomenon. For example, the *-er* of *letter* is unstressed /-ər/, not stressed /'ur/, giving rhythm to the word. Second, spelling patterns – e.g., *can* and *candy* – end to be valid predictors of pronunciations of stressed syllables. Third, cue spellings – e.g. ar in *car* and *party* tend to have the same sound values in stressed syllables, permitting the application of cue learning. Hence, the countdown is applied only to stressed syllables in order to preserve their normal pronunciation.

Purposes

The phonics countdown serves these purposes:

1. To teach pupils to hear undistorted sounds which the spellings of a word represent; e.g., the pupil does not attempt (a) to say a (distorted) consonant sound in isolation from the vowel sound of the whole word, or (b) to associate the letter name of the consonant with the consonant sound. For example, the pupil learns to say the monosyllable /'kat/ not /kə-/a-/tə/, a three-syllable word. Most people, including children, are not aware of the sounds of speech which they have learned to use automatically.
2. To teach pupils to hear and to say the vowel sound in relation to the undistorted consonant boundaries; that is the preceding or following consonant sound is always sequenced with the vowel, as /'ka/ for *ca* and /'at/ for *at* of *cat*.
3. To teach pupils to relate a sequence of undistorted sounds in time (e.g., /'kat/) to a sequence of *letters* in space (e.g., *cat*) – to understand the alphabetic principle that spellings (writing) represent speech sounds.
4. To teach pupils to identify three types of (stressed) pronounceable units:
 - a. Consonant-vowel (e.g., *sou* of *sound*) or vowel-consonant (e.g., *ound* of *sound*)
 - b. Vowel, as the *er* of *her*, or glide, as *oe* of *oil*
 - c. Stressed syllable, as the *bubb* of *bubble*

5. To teach pupils the organization, or structure, of the word form (e.g., ca-at for the /'ka/'at/sound of the whole word)-the structural meaning of the word form.
 6. To teach pupils to relate the sequence of the letters to the sequence sounds and the sequence sounds to the "life" meaning of the word (e.g., a cat as an animal)-the referential meaning of the word. Meaning-both structural and referential-gives reality to the word form and makes for ease of recall (recognition).
 7. To teach pupils to make automatic responses to the informative structural elements of the *whole* word; e.g., to the *bu* or the *ug* of the whole word *bug*.
 8. To teach pupils to use two predictors of the letter(s) representing the vowel sound, increasing the probability of identifying the word; e.g., the consonant-vowel blend *dre* of *dress*.
- To teach pupils *perceptual closure*: e.g., after saying /a/, the child says the whole word *cat*, hearing and saying the sound /a/ in relation to its consonant boundaries, *c* /k/ and *t* /t/. This ability to achieve closure, or completion, of the whole word helps the pupil to achieve independence in word perception and recognition during silent reading. For example, if he asks for help on the word *find* and points to the *i* as the unknown, the teacher tells him the sound /ī/ rather than the whole word. Then the pupil closes, or completes, the whole word by saying /'find/ and by checking to see if it makes sense in what he is saying. This is a "quickie" – a time saving device that facilitates rather than disrupts the pupils' silent reading.
10. To teach pupils to use *cues* to the sound for the vowel letter(s); e.g., the *ind* of *kind* and *find*, the final consonants *t* and *ll* of *bet* and *fell*, the *ame* of *came* and *game*, the *ou* of *loud* and *sound*, etc.
 11. To teach pupils to *group*, the letters of the written word into pronounceable units; e.g., not f-i-r-s-t but *fir* and *irst* of *first*.
 - a. This grouping of letters for sounds focuses attention on informative parts of words; e.g., the *up* of *cup*. Attention as a selector of information to be processed is a potent factor in word perception.
 - b. Grouping the pronounceable parts of a word reduces the memory burden (attention span) required for word perception; e.g., attending to two groupings as the *ca-atch* of *catch* is not only more productive but also less of a memory burden than trying to decode the *five* letters.
 12. To teach pupils to use feed forward – to relate speech sounds to spelling – through hearing and saying the sounds (the *feed*). In this application of skills to unknown words, the pupil has the *feed* (the sounds) to *feedback* from the letters.
 13. To teach pupils a *set* to read by structures; e.g., the *pla* or *ane* of *plane*, the *tra* or *ain* of *train*, etc.

Caveats

A phonics countdown is an effective approach to one facet of word perception: the relation between sounds and letters. It is a crucial procedure in the use of V-A-K (kinesthetic) and the V-A-K-T (tactile) developed by Fernald and Keller as well as the V-A (phonic) techniques in word perception. Which of these three techniques is used, of course, depends on diagnosed individual differences in word-learning abilities. Both the V-A-K and V-A-K-T *reinforce pupil* learning via combined modalities: visual-auditory visual-auditory-kinesthetic, or visual-auditory-kinesthetic-tactile. But the use of these last two techniques emphasizes motor skills as preparation for reading as well as for word learning during beginning reading activities. These techniques require special teacher preparation via carefully supervised laboratory-demonstration courses.

Another caveat: to say that there is a loose "fit" between the sounds of English and the letters used to represent them is a gross and misleading understatement. But in spite of the facts, phonics – the study of the relationships between sounds (phonemes) and spelling (graphemes) – has been touted from the sixteenth century to the present as either *the* way or *one* way to teach reading. A spate of studies has been published on the futility of generalizations, of rules, for spelling, but phonics zealots still reign supreme.

In general, three vowel rules have been served as the hard core of phonics: "short" vowel sounds in closed syllables, as in *at* and *sit*; final *e* to signal the 'long' preceding vowel as in *ate* and *made*; two adjacent vowel letters with the first vowel long, as in *eat* and *boat*. The batting averages – the application/ exception ratios in beginning reading for these three rules are: 74%, 53%, and 50%. But only 35% of the commonest words "fit" these three rules. Yes beliefs in teaching phonic rules – too often, *memorizing* them – are not what they seem to be – they are much, much worse! (Based on studies in our Reading Research Laboratory)

Hence, a short or long countdown or any other device designed to communicate the "alphabetic principle" is freighted with potential confusion that produces reading disabilities.

In 1933, Leonard Bloomfield, the innovator and great linguist of his time, suggested the idea of teaching regular spellings first as in *cat* and *Dan*. However, he issued this caveat: "The real factor of difficulty is the host of irregular spellings which remain, no matter what values are assigned as regular." (p. 501)

Three sets of Bloomfield's regular spellings were made highly visible to the teaching community by Charles Fries as three general spelling patterns: *at-pet-sit-not-cut*; *ate-like-home*; *train-eat-coat*. These three "spelling" patterns," by this or any other name, are readily recognized by sophisticated teachers as the same old, threadbare, ridiculous "vowel rules."

Why have "vowel rules" and "spelling patterns" continued to be the reading fallacies for centuries? Why do some people persist sometimes, in seeking the impossible: the reconciliation of traditional spellings and speech sounds? Probably for the same reasons that birds will be the last to discover air and fish will be the last to discover water. That is, parents and teachers have not discovered a discipline called orthography which was taught as a required subject in grammar schools, circa 1920. Pseudo conservatives who "get that way by degrees only" might heed this comment by Leonard Bloomfield: "The difficulty of our spelling greatly delays elementary education, and wastes even much time of adults." (p. 501) He continues with this understatement: "There would be no serious difficulty about devising a simple, effective orthography for all types of standard English." (p. 502)

In brief, an obvious roadblock to reading instruction – an antiquated orthography which has too loose a fit with present-day speech – has been and IS passed by like a stranger on a very dark night.

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6. Letter to the Editor

Prince Ruppert drops

To the Editor:

Edward Rondthaler

I often wonder if your contributors have ever heard of Prince Ruppert drops. I learned about them from Dr. Godfrey Dewey, and they've played an important role in my thinking ever since.

To alert me to the nature of phonemic pitfalls, Dr. Dewey, when I visited him at Lake Placid, described a unique characteristic of drop-shaped glass globules, known as Prince Ruppert drops. These have been made by glass blowers from time immemorial. As the blown glass drop slowly cools, a tiny bead forms at its topmost point. If this bead is clipped off the whole glass shatters, signifying that the lines of force or stress are all tied together in that tiny bead.

"This illustrates the danger," Dr. Dewey said, "that spelling reformers often encounter. A seemingly insignificant spelling change that appears to solve one phonemic problem may later prove to have far reaching adverse effects on other phonemic situations, and generate more problems than it solved. Spelling reformers are prone to advocate ill conceived changes that will fence them into corners from which, later on, they cannot rescue themselves. You cannot be sure that your system will work or that it covers every phonemic situation until you actually apply it to thousands and thousands of words. Walter Ripman transliterated over 15,000 words in his Dictionary of New Spelling. It takes that much hard work to develop a really usable system – unless, of course, you are merely aiming at a better i.t.a. There is no shortcut. You may look for one, but you won't find it."

Dr. Dewey is no longer with us, but if he were looking on the scene today I think he might feel pressed to add: "Even if you do not share Miss Yule's and Dr. Wijk's conviction that reformed spelling should not give too big a jolt to present adult readers; even if you're satisfied with an orthography that is less than a full match; even if you're hiding important exceptions under the rug; even if you're blindly assuming that the giant printing, computer and typewriter industries will scrap their alphanumeric machinery and embrace your system of reform; nevertheless, your homework should at a minimum consist of transliterating the ten or fifteen thousand English words of greatest frequency. By that time you'll have swept up a dustpan full of Prince Ruppert drops and your work will be the better for it. When your task is finished, look back at what you've done and see if it meets your expectations. "

As one who has tried this strong medicine I can testify that after you reach fifteen thousand you have a far greater respect for the problem and you've stopped fooling yourself. That's about the point at which you get your second wind and are gung ho for thirty thousand, and then for the rarified air of forty or fifty thousand where there are no more Prince Ruppert drops to be shattered. It's a bracing experience; as good as a climb to the top of the Matterhorn. There is no better phonemic exercise. Not even a game of reformed Scrabble.

[*Spelling Progress Bulletin Summer 1981 pp18–20 in the printed version*]

7. Syllabication Generalizations: Help or Hindrance to Communication, by Donald C. McFeely, Ph.D.

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As a professor of reading, I am asked many questions from my students and in-service teachers about reading. One topic of concern is the importance of teaching children about syllables through syllabication generalizations.

In order to answer the many questions I receive, I must turn to my own research (McFeely, 1974) or to the literature that is replete with articles and books related to syllabication. When I or my students go to the literature, that is when a state of confusion becomes apparent. I should like to touch briefly the surface of this literature.

Research on the Syllable

Lenneberg (1967) notes that: "Since the time of ancient grammarians and inventors of scripts there has been an awareness of some rhythmically occurring events in speech, namely the syllable (p. 115)."

Kenyon (1928) explains syllables on the principle of sonority or degree of audibility. He explains that vowels are the most sonorous of all speech sounds. Therefore, the phonetic center of a syllable is its point of greatest sonority. Boundary lines are the point between them of least sonority, which may or may not be silent. This, he states, may fall between a vowel and a consonant, or on the consonant itself if it is one of the least sonorous.

Research on Syllable Boundaries.

In order to apply syllabication generalizations to words, it has been assumed that syllables have boundaries of where it (the syllable) begins and ends as the child pronounces each syllable. A number of authorities (Groff, 1971; Hall, 1964; Jones, 1950; Malone, 1957) feel that it is difficult and sometimes impossible to determine precisely where a syllable begins and where it ends.

Based on the findings of the linguists and the problem of determining boundaries of the syllable, Groff (1971) concludes that it is impossible to accept some of the evidence of dictionary syllabication because "there is no theory in linguistic literature to our knowledge that supports *dictionary syllabication* as a system by which boundaries of the syllable should be defined (p. 27)."

Evolution of Syllabication Generalizations

For years educators have advocated the use of dictionary syllabication. Dolch (1938) maintains that "what the schools definitely need is a teaching of phonics of polysyllables (p. 124)." Dolch (1945) further believes pupils "must have a method of attack, that is, conscious rules to follow (p. 278)."

Betts (1959) supports Dolch's idea by proposing a sequential program wherein the child, in this sequential order: (a) identified vowel letters, (b) counted the number of syllables in a word, (c) noted which were accented, and (d) decided on which vowel rule would help him know this (pp. 261-262).

William S. Gray (1960) has been very influential in advocating dictionary syllabication. He states that "if pupils are to progress in reading they should learn how to apply visual clues to vowel sounds in two-syllable words. To do so, they must learn how to divide printed words into syllables (p. 44)."

Anderson (1968) offers rules for dividing words into syllables and states, ". . . through teaching syllabication children will be able to pronounce new words through applying the rules that might be relevant, arrive at correct spelling, and break words at the end of a line of writing in accordance with syllabic principles (p. 175)."

Bush and Huebner (1970) conclude that breaking words into syllables may help the reader in many ways and that, "children have to learn to use a number of generalizations in breaking words into syllables (p. 319)."

Syllabication as a form of structural analysis has been advocated by various authorities.

Dechant (1970) discusses syllabication as a skill of structural analysis and states that, "Syllabication must receive attention at all levels of reading instruction. For most pupils, learning in this area is greatest during the intermediate grades (p. 319)."

DeBoer and Dallman (1970) state that, "Syllabication can aid in the identification and recognition of words (p. 131)." However, they feel it is "not essential to the recognition or pronunciation of a word to know exactly where some of the breaks between syllables occur (p. 131)."

Durkin (1970) contends that when a child has to deal with syllabication of an unknown word, he needs to consider a number of generalizations, all concerned with syllabication. She concludes that:

When a child encounters a word which is unknown to him in written form, a phonic analysis generally should be attempted. With such an analysis, the first job is to consider the likely syllabication of the word because the syllable is the basic unit of pronunciation (p. 236).

Jones (1971) doesn't advocate memorizing rules but feels that "principles of syllabication and accent are helpful in arriving at the pronunciation of a word (p. 169)." Strang, McCullough, and Traxler (1967) discuss the problem of secondary students in word recognition and state that "those who do poorly [in syllabication] should be given additional practice (p. 228)."

Cordts (1960) also believes rules of syllabication are useful although as she states, "Unfortunately these rules too, like most rules, have their exceptions (p. 173)." Cordts lists five rules that she feels are useful:

1. When there is one consonant between two vowel sounds, the consonant usually goes with the next syllable, if the preceding vowel is "long," and with the preceding syllable if the vowel is "short" or has a sound other than "long."
2. When there are two or more consonants between the vowels in a word, all the consonants go with the next vowel, if the vowel is not "long", the first consonant stays with the preceding syllable and the others go with the following syllable.
3. When there are two identical consonants between the vowel sounds, the word is divided between the consonants.
4. When each of two vowels in a word forms a separate syllable, the word is divided between the vowels.
5. When a word is composed of two complete words, the word is divided between the words in the compound word (pp. 173-175).

An analysis of the rules advocated by Cordts implies the child must already know how to pronounce the word in order to syllabicate it. For example, in Rule 1, the child needs to know that the first vowel in *hero* is long to divide the word *hero* and the child needs to know that the first vowel in *radical* is short to divide the word *rad/i/cal*. The same holds true for Rules 2 and 4. In Rule 2, the

child needs to know that the vowel in *program* is long to divide the word *pro/gram*, and that the vowel in *capsule* is short to divide the word *cap/sule*. In Rule 4, the child needs to already know that the u and i in the word *ruin* are in separate syllables.

If the purpose of syllabication is to aid the child to pronounce unfamiliar words by breaking them into smaller parts to apply phonetic skills, then Rules 1, 2, and 4 as advocated by Cordts seem to be too complex and erroneous. In addition, as written, Rule 2 is not understandable.

This examination of the rule circumstance points up quite clearly the futility of either rules or generalizations. . . . it suggests loudly and firmly that from the beginning of reading instruction attention should be focused 100% on comprehension rather than on word-recognition rules, because 100% comprehension will always have 100% utility . 368).

Schell (1967) considers dictionary syllabication as being inaccurate instruction. He contends that not only do such "instructional techniques frequently fail to distinguish between reading and spelling. . .[but] it appears that sometimes it is not clear whether pronunciation or syllabication comes first (p. 134)."

The present emphasis on linguistics has influenced the critics of dictionary syllabication. Wardhaugh (1969) in discussing rules for syllabication found in phonics programs, states that: Wardhaugh further concludes that the rules of syllabication are much too complicated as presently stated. In fact Wardhaugh claims that if a child can use the rules of syllabication, he (the child) really doesn't need them because the use of these rules require the child to have the very knowledge that the rules are supposed to be teaching (p.9).

Lefevre (1964) supports Wardhaugh's conclusions that syllabication rules have almost nothing to do with the actual sound patterns of English. Division of words into syllables, according to Lefevre, "is primarily a printer's device rather than a problem of reading or writing; words should seldom be artificially uttered as if the syllables were actually separated in speech (p. 177)."

Criticisms of Syllabication Generalizations

The critics of dictionary syllabication base their conclusions on the lack of research and the findings of linguists. Russell (1961) concludes that "research studies have not given clear evidence of the values of structural analysis when taught by itself as a technique of word recognition (p. 312)."

Spache (1963) concludes that there is little relationship between retention of syllabication rules and success in analyzing words into syllables (p. 236). He further states that, "it is doubtful that they [syllabication rules] are long remembered or have any great functional value for maturing readers (p. 236)."

Stauffer (1969) maintains that "syllable rules are of some value in spelling, and it is in spelling class that they are frequently taught (p. 359)." Stauffer challenges the advice of many reading experts and especially Gray (1960) by concluding, "No pupil has learned to be on his own in reading by memorizing the hundreds of rules supplied in *On Their Own in Reading* by Gray (p. 358)." Stauffer does concede that syllables "are of some value in the early learning-to-read stages when on occasion, if a child syllabicalizes a word and then speaks it, he may identify it as a spoken word he knows (p. 359)."

In addressing himself to the question of teaching generalizations, Stauffer (1969) states:

Reading teachers are asked to teach children to divide words. . . such rules are often quite circular, have almost nothing to do with the actual sound patterns of English and almost everything to do

with line-breaking conventions, and hardly any possible application beyond the typesetter's domain (p. 9).

Research on the Utility of Syllabication Generalizations

Sartorius (1930) reports one of the first studies concerned with the utility of phonic generalizations. Her study is related to spelling rather than a specified vocabulary. Oaks (1952) analyzed 1,966 words to determine which were conformations and which were exceptions to eight generalizations. Oaks recommends not to include the generalization, "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 'e' is silent because of its infrequent occurrence (p. 617)."

A number of studies have evolved that have investigated the varying degrees of utility of phonic generalizations, which have included syllabication generalizations (Bailey, 1967; Clymer, 1963; Emans, 1963; McFeely, 1974; Parker, 1968).

For the purpose of this paper, two syllabication generalizations have been analyzed. These are as follows:

1. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants. VC/CV
2. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable. V/CV

Table 1 presents the findings of these studies as a means of comparison. Table 1 indicates the investigator, the number of applicable incidents and conformations, and the percentage of utility.

Table 1
Utility level of various syllabication generalizations

Generalization	Bailey	Clymer	Emans	McFeely	Parker
1. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants. VC/CV	1311 -----= 1689 78%	404 -----= 563 72%	648 -----= 811 80%	1305 -----= 1546 84%	628 -----= 741 85%
2. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable. V/CV	638 -----= 1283 50%	190 -----= 427 44%	313 -----= 659 47%	1109 -----= 2014 55%	385 -----= 730 53%

An attempt has been made here to analyze only two generalizations from various studies. A more in-depth discussion can be found in a previous study done by this writer (McFeely, 1974).

For the purpose of this paper, I analyzed the VCV generalization and tried to determine could teachers offer students an alternative if the generalization is an exception.. For example, if students apply the VCV generalization to a word such as *vivid*, they would find the dictionary pronunciation would divide the word *viv-id*, not *vi-vid* as the generalization would indicate. What would happen if the teacher would tell students to try the V/CV generalization and try to pronounce the word to determine if it "sounds" right? If not, divide the word after the consonant VC/ V.

The number of exceptions from a previous study (McFeely, 1974) was analyzed. I found 2,014 incidences of the VCV pattern with 1,109 conformations for a 55% utility. This meant that there were 905 exceptions. When I applied a VC/V generalization to these words, I found 863 conformations or a degree of utility of 95%. It would seem teachers could increase the usefulness of the VCV generalization by telling students to try to divide the word after the consonant if it doesn't sound right after they divided after the vowel.

Conclusions

At this point I need to answer the question, "Are teaching syllabication generalizations a help or a hindrance to communication or more specifically to reading?" Now the reader must make his/her own decision as to the usefulness of syllabication. It is apparent from the review of literature that there is no agreement from the various so-called authorities in reading as to the value of syllabication generalizations. Teachers can choose any side they want.

I for one, however, have taken a position that it is not so much if we teach syllabication generalizations but *how* we teach. I would agree with Rosati (1973) that we should teach the student to experiment with syllabication rather than consider syllabication to be based on rules for dictionary accuracy.

Burmeister (1968) recommends teaching those generalizations that indicate the highest utility. She recommends that "teachers place more confidence in some generalizations than in others and that they be particularly cautious when instructing children in the use of phonic generalizations which appear to have limited value. Teachers should advise children to examine words in which these generalizations might apply in two or more different specific ways until oral recognition is achieved (p. 95)."

My suggestion to teachers is that knowledge of syllabication can be helpful to students when they need to divide a "big" word into "smaller parts" in order to pronounce the word. I inform them, however, that syllabication can not guarantee "correct" pronunciation since I feel that there is not always such a thing as correct pronunciation. I usually give the following steps in using syllabication generalizations:

Tell the students to do the following:

1. Look for compound words.
2. Look for a prefix or suffix. Try to pronounce the word.
3. Look for a VCCV. If the word has a VCCV, divide it VC/CV and try to pronounce the word.
4. Look for a consonant -le. Try to pronounce the word before the consonant and after the consonant.
5. Look for a VCV. Divide after the V/CV. If it doesn't sound right, divide after the VC/V.

These five steps are based on a priority of high to low degree of utility based on the various studies mentioned in this paper.

Syllabication generalizations can be useful in the hands of creative, knowledgeable teachers who understand that syllabication generalizations are only one of the tools that students can use to pronounce unfamiliar words. Students need to be taught to use their knowledge of syllabication generalizations when they meet an unfamiliar word in their reading. Students need to understand that the generalizations do not always work and that they (the students) should utilize a systematic approach when attempting to apply the generalizations.

The question that teachers need to ask themselves is a question that was asked of me as I tried to defend my rationale for *not* teaching the VCV generalization, "Isn't a 40% help better than 0% help?"

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Wise Sayings

When money comes too easy, it goes so easy. N. Tune
Eternal vigilance is the price of a beautiful lawn. N.W.T.

This is not work. It's a labor of love.
The eyes are the mirror of the soul. Shakespeare

After death, it's too late to say, "I love you."