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ABSTRACT

This master's thesis examines the utility of Edward Fry's 23 syllabication generalizations. To validate these rules, two sets of one thousand words each were selected, one set containing "easy" words taken from the Word Frequency Book, the second set containing "hard" words taken randomly from the Thorndike-Barnhart Advanced Dictionary. Syllabication of all the words was determined by graphic and phonetic divisions, and a set of criteria (Clymer, 1963) was used to evaluate the Fry generalizations as they applied to syllabication in the word lists. Based on comparisons between easy and hard word divisions, phonetic and graphic divisions, and findings from other studies, this study concludes that all the Fry syllabication generalizations can be used in instructional strategies, though two generalizations might be more useful as subsidiaries to other generalizations, and seven generalizations achieved marginal utility levels. (Author/RL)

A VALIDATION OF THE FRY SYLLABICATION GENERALIZATIONS

A THESIS

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CHAPTER I

INTRODUCTION

The use of syllabication in reading had been endorsed in the 1930's by Dolch and in the 1940's by William S. Gray. Most of today's well-known writers on phonics include many who defend the early notions of Gray on syllabication and reading. Groff (1971b) mentions over 40 leading reading specialists who advocate the teaching of syllabication. These people have pointed to the varied benefits of knowing how to syllabicate words. Syllabication functions as an aid in word recognition by helping the pupil break words into smaller units, pronounce these, blend, and thus recognize words in his auditory vocabulary. There have been, however, adversaries to syllabication as an effective tool in the teaching of reading. Most of these adversaries have objected to syllabication because of the disparity between pronunciation and orthography. Syllabication has been based on the work of lexicographers who divide words by structure. The adversaries to syllabication have pointed to the work of linguists who divide words by pronunciation.

With the exception of the McFeely study of 1972, there have been no direct attempts to assess the utility level of syllabication generalizations. The studies of Clymer of 1963, Burmeister of 1966, Bailey of 1967, Emans of 1967, and Parker of 1968 only tangentially attempted to compute the utility level of a few syllabication generalizations. The primary purpose of their studies was to assess the utility of phonic generalizations.

Statement of the Problem

The purpose of this study was to take Fry's list of syllabication generalizations and apply them to a set of 1,000 easy words taken from the Word Frequency Book (1971) by Carroll, Davis, and Richman, and a set of 1,000 hard words randomly selected from the Thorndike Barnhart Advanced Dictionary (1974). The aim was then to determine what percent of syllable divisions followed rules when a 75% cutoff level was used together with 20 applications as the limit of utility. The major questions asked were:

1. How did the percentage of utility of the generalizations compare in both the easy and hard lists of words when 75% was used as a final assessment point of acceptability together with a 20 application limit?

2. How did the percentages of utility compare within generalizations when both the phonetic division and the graphic division were used as assessments of syllabic breaks?
3. How did the percentage of utility compare with those findings from previous studies?

Importance of the Study

Syllabication is the peculiar skill integrating a knowledge of phonics into the first steps of structural analysis. Arguments against syllabication have rested in the supposed incongruity between the spoken syllable and its written counterpart. Dechant (1973) has maintained that speech syllables correspond with enough regularity. Consequently, a knowledge of printed syllabication rules should help children pronounce unfamiliar words (Durkin, 1972). What has been needed is a set of rules that accurately describe the syllabic divisions of most words both phonetically and graphically. Research also is needed to determine whether or not phonetic and graphic syllabic divisions can be consistently described by the same generalizations. Fry wrote his rules so that they would be as consistent as possible in describing the division that occurs between graphic and phonetic syllabic breaks. The Fry rules are the most extensive syllabication

generalizations in the reading literature. However, no other study had subjected them to verification.

There has been some data available concerning the syllabication of easy words, but little if any research is available regarding the syllabic consistency of more difficult polysyllabic words. Thus a detailed assessment of selected syllabication generalizations would provide answers to the relative usefulness of certain rules.

Definition of Terms

A syllable was defined as a unit of pronunciation consisting of a vowel sound alone or with one or more consonant sounds and pronounced with one impulse (Dechant, 1973). Based upon the viewpoint of the field, there were many definitions of the syllable available. However, Dechant's definition seemed the most congruent with the purpose of this study.

A syllabication generalization was defined as any arbitrary rule about syllables asserting that if a statement concerning the division of words into syllables was applied to an indefinite number of words, that generalizations would enable one to divide and pronounce those words (McFeely, 1972). For example: Final "le" picks up the preceding consonant to form a syllable.

Syllabication referred to two types of division. The graphic division was the boldface entry used by printers and typesetters for purposes of writing. The phonetic division immediately following the boldface entry, was the division used to carefully map the breaks in a word that occur when the word was actually spoken. Specifically, syllabication was defined as the act of dividing either of these two entries into their component parts or syllables (Betts, 1957).

"Easy" words signified those selected from the top 2,500 of the Word Frequency Book. This frequency count, to date, was the most recent and comprehensive attempt to account for the frequency of words in the American school lexicon.

"Hard" words signified those which were not in the easy word count and were from the Thorndike Barnhart Advanced Dictionary (1974). This dictionary was designed for school situations and considered useful for purposes of this study.

Limitations of the Study

This study did not include those generalizations involving accents and open and closed syllables. Thus, a complete picture of the syllabication process was not given.

As was stated previously, the Word Frequency Book was used as a source of the easy words and the Thorndike Barnhart Advanced Dictionary was used as a source of the hard words. Any shortcoming inherent in these books was also a part of this study.

This study did not establish the percent of utility required for a generalization to be useful. It only established the percentage of times a generalization was used when it applied to a syllable. The Clymer criteria of 1963 consisted of 75% being the level a generalization should reach. Clymer also proposed that 20 applications was the minimal amount of times a rule should apply to be acceptable. Clymer's rationale was that every time a child applied a selected rule it should be consistent three out of four times. This criteria was arbitrary at best. However, its use in many other studies necessitated its relevance in this one.

CHAPTER II

REVIEW OF THE LITERATURE

Because of the divided views on the importance of syllabication, it was necessary to examine those supporting syllabication and those against it. An examination of the research related to syllabication and reading was followed by a review of the studies performed that bear a close relationship to what was done in this study. Finally, some of the important word frequency counts were examined.

Adversaries of Syllabication: Educators

In the 1960's, Spache raised the question of the utility of various syllabication rules and which rules were worth teaching students. He also asked if there was evidence that mature readers used the rules they have been taught. He said that there were very few conclusive answers to these questions (1963). McKee (1966) took a stronger stand than Spache in denouncing the issue of syllabication when he said that pupils who use context and letter-sound associations for consonants rarely need to use the knowledge of rules

of syllabication in order to call to mind the familiar spoken word for which a given printed word stands. Word analysis was not needed once the sound of a word was known. For the purposes of pronunciation, syllabication was a confusing skill because it implied that a student must be able to say the word before he applied the rule (Glass, 1967; Schell, 1967). Groff, in 1963, maintained that even the teaching of accents should be reassessed and in 1968, both he and Anderson, claimed that for the purpose of spelling, dictionary syllabication was not necessary nor had it proved to bring greater gains in spelling.

Arguments against syllabication have had many different objections. In the 1970's, Goodman, Smith, and Meredith listed a set of cue systems that were important to word recognition. Syllabication was not among them. Patrick Groff (1971a) inferred from this list that Goodman judged the use of dictionary standard syllabication as superfluous. In his book, The Syllable: Its Nature and Pedagogical Usefulness, Groff, after attempting to give a complete analysis of the syllable from both a linguistic and a research perspective, concluded that the rejection of dictionary standard syllabication for teaching purposes was inevitable (1971b). Merryman and Johnson examined the issue of syllabication and emphasized the point that many

authors of children's reading materials seemed unaware of the fact that the primary purpose of syllabication was to help children pronounce words. They then proceeded to analyze three general syllabication rules with recommendation for changes in these rules with the inclusion of exceptions. Two reading people responded to the Merryman and Johnson article. It was pointed out by Despin (1972) that the Merryman and Johnson rules failed to mention open and closed syllables. Rosati (1973) also responded calling for less time to be spent on rules for syllabication and more on the alternation of vowel pronunciation accompanying accent shift. Finally, she offered her own abbreviated syllabication rule and that was students should either divide before or between consonants or not divide at all.

Seymour (1973) claimed that reading and language specialists were beginning to agree on one point and that was dictionary syllabication was not the way to decode long words. She proceeded to list various examples where rules were violated by exceptions, and showed that syllabication was not a very apt term. According to her, "word division for decoding" was more fitting because the object was not to listen for syllables or to count them, but to decode the word by means of dividing it into more manageable visual parts.

Zuck, in 1974, called for a doing away with syllabication rules and analyzed four different reasons why this was important. His main objection, however, was similar to that of Schell (1967) and Glass (1967) who felt if a child knew how to say a word then there wouldn't be a need for him to know the rule. Waugh and Howell, in 1975, examined the definitions of a syllable based on the work of linguists and claimed that teaching strategies, in the area of syllabication, should be directed toward facilitating the match between print and language or thought. According to Waugh and Howell, if teachers were to abandon "the pillars of the instructional program," together with workbooks and Ditto masters, four recommendations were to be made: (1) critically examine instructional materials, (2) shift from a mechanical to a meaning emphasis, (3) teach high utility generalizations, and (4) use the correct dictionary guide.

Adversaries of Syllabication: The Linguists

Linguists generally agree that most people can determine quite easily the number of syllables contained in a word or utterance (Jones, 1966). According to Abercrombie (1967), the syllable has appeared to be an intuitively recognizable unit even for primitive peoples. According to linguists and phoneticians, the important

issue in analyzing syllables within words has been that syllables are units of sounds and not units of writing (Groff, 1971b). When linguists discuss the problem of the syllable, it becomes increasingly apparent that theirs is an issue of definition revolving around the spoken syllable and not the written unit. It is not the number of syllables in a word that causes the difficulty in their analysis, but the boundaries of syllables.

According to the research done by Groff, writers on phonetics have described the syllable in four different ways. First, some defined the syllable on the basis of its stress or prominence. These features of the syllable involve pitch, duration, loudness, sonority, juncture, contour tones, and the inherent qualities of vowel sounds (1971b). In this context, Robins (1964) referred to the vowel in a syllable as having "a maximum or peak of inherent sonority" between two consonants that have a "minima of sonority." Bloomfield (1963) called the vowel the "center of prominence."

A second theory has been offered by phoneticians who have proposed that sonority, stress, and prominence can only be expressed in acoustically meaningful statements through the mechanical recordings of speech by a spectrograph. An objective version of the syllable can only be seen as the spectograph prints out sound

patterns and thus, a visual boundary of the spoken vowel is seen as it really exists in open air (Groff, 1971a).

A third group of linguists have defined the syllable as specifically physiological in nature (Groff, 1971a). Levin and Gibson (1975) have called these linguists "the breath group." The force with which syllables have been uttered depends on the lungs which actively have pushed air outwards in successive units (Hockett, 1958). Groff (1971a) referred to this as the "motor correlate" which has allowed the linguist to study the syllable by examining the expiratory chest muscles during the speech act.

The fourth and final theory some linguists have embraced has been the distributional theory. Proponents of this theory claim that a syllable should be looked at as a unit of elements resulting from the fact that certain of these elements contract a relationship with one another (Hjelmslev, 1970). Groff (1971b) called these relationships the "distributional features" which are the actual, permissible clusters of sounds in words. O'Connor and Trim (1953) talked about "frequency of occurence" of different types of syllable finals and initials. In a study, they found that CV or the consonant-vowel pattern, is more frequent than all other possible phoneme combinations.

Two points have been noticed in the linguistic analysis of the syllable. First, there has been no final agreement on the true boundary of the syllable. Hughes (1962) has questioned whether there ever have been any observable boundaries between syllables. Hall (1964), in trying to illustrate the enigma of syllable boundaries, said that in syllabicating a word like "water" the division really falls in the middle of the "t." Wardhaugh (1966) has said that the point at which one syllable may be said to end and another begin is often impossible to determine.

The second point that has been noticed in the linguistic analysis has been the fact that only the actual pronunciation of a word rather than the graphic representation has been considered. Malone (1957) has pointed out that in conventional syllabication, the actual pronunciation may have been ignored if it conflicted with the morphemic boundary. Thus, "training" has been pronounced "trai-ning," but some dictionaries syllabicate it as "train-ing," in accordance with the morphemic analysis into a base "train" and a suffix "ing."

Finally, Wardhaugh (1969) has been correct when he claims that the rules for syllabication are extremely complicated to teach children. Lefevre (1964) has also been correct when he claimed that syllables in speech

and syllables in print have not been the same. However, Lefevre's claim that "mischief" has been done in reading instruction by attempting to make children pronounce all the letters and all the syllables in each word seems unwarranted. This is so because the linguistic analysis of the syllable is not in agreement. The linguistic concept of the syllable that has been proposed is complex and would also be difficult to teach to the child (Levin & Gibson, 1975). Finally, for Wardhaugh (1966), syllabication may not have any "truth value" but he has admitted that there was "pragmatic value" in using it to encourage students to learn to spell, read and conform to English writing conventions.

Advocates of Syllabication: Educators

Cook and O'Shea wrote back in 1914 that dividing a word into syllables helped the student attain correct pronunciation. The use of syllabication in the teaching of reading was well endorsed by Dolch in the 1930's and 1940's. In 1938, Dolch recommended a "thorough teaching of syllabication" to enable a student to attack polysyllables. A child with constant practice in word attack through syllabication, would acquire a facility for what Dolch called "sight syllables." In 1940, Dolch called for more research to determine the best method of sounding out polysyllables, and in 1945, he

outlined a program for word attack which included syllabication as a major skill since he felt that letter phonics didn't seem to be enough help to the child who encountered long words. Even in 1955, Dolch was still holding to the importance of syllabication in word attack and in an article entitled "Recognition of Long Words," he outlined what he thought were the three most important rules to be taught.

In 1948, William S. Gray in his book On Their Own in Reading listed at least 20 complex rules of syllabication involving accented and unaccented syllables. For Gray, syllabication helped the student get a visual handle on pronunciation units. According to Groff, many who have advocated syllabication today have their roots in Gray's ideas. However, people like business educators were always adding new rules and emphasizing the importance of syllabication generalizations for spelling, pronunciation, and type setting (Davis, 1953; Handy, 1943).

In 1955, Osburn pointed to the fact that the techniques for teaching syllabication were "woefully inadequate." Osburn, then in a study, looked at 9,000 polysyllabic words in the Rinsland List. Out of these words, he took a frequency count of initial, final and medial syllables. His hope was that teachers would utilize the most frequent syllables in his study and

thus improve a student's syllabication and spelling ability. Osburn in assuming the syllable was fairly regular, also assumed that syllabication would help the reader break syllables into more manageable units.

Horn in 1956, emphasized the fact that breaking words into syllables helped in spelling and comprehension, and Betts in 1959, outlined a sequential method of teaching phonics which included syllabication. For Betts, syllabication was inextricably related to phonics, auditory perception, and accent. According to his program, a child should have been ready to learn syllabication by the third grade level. In 1956, Burton also outlined a sequential program for teaching syllabication. In 1959, Dawson and Bamman maintained that syllabication was "vital to good spelling, speaking, and writing." For Strang and Braken (1957), knowledge of some rules of syllabication would aid students to become "independent readers."

In the early 1960's, reading specialists were still applauding syllabication as a useful skill in reading. Improved word recognition was still held to be a meaningful by-product of syllabication (Bond & Wagner, 1966; Cordts, 1965; Harris, 1961; Heilman, 1967). In the later 1960's, some reading specialists began to evaluate more critically the teaching of syllabication rules. Stauffer pointed to the lack of consistency of

syllabication rules but said that there was some value in teaching them for spelling purposes. While holding that syllabication was important in word recognition, spelling, and writing, Spache and Spache (1969), asked which principles of syllabication were worth teaching and what kind of precision was achieved in reading with these skills.

In the 1970's, reading specialists continued to recommend the teaching of syllabication. However, most were in agreement that caution should be exercised in the teaching of these rules. In 1970, Zintz agreed with Spache and Spache and implied that students should discover and apply the rules rather than recite them. Word recognition was still considered an important by-product of syllabication (Fry, 1972, 1977; Tinker & McCullough, 1975; Lesiak, 1977). Walcutt, Lamport and McCracken (1974) emphasized the point that pronunciation should be the most important guide in learning syllabication generalizations. In 1972, Durkin, while acknowledging Wardhaugh's objections to syllabication, still maintained that the skill was helpful to a child attempting to figure out an unfamiliar written word. Also in 1972, Iris Shah was pointing to the fact that there were many regular correspondences between the way a word was pronounced and the way it was spelled. Thus syllabication could be justified for spelling purposes.

Dechant (1973) looked at the spoken syllable and the written syllable. He emphasized the fact that they corresponded with enough regularity so that the printed syllable could be used in dividing words into parts which in turn could be readily analyzed and blended to pronounce words.

It can be concluded that a majority of educators have supported the teaching of syllabication. Patrick Groff (1971b) in his book The Syllable: Its Nature and Pedagogical Usefulness looked at over 40 reading educators who advocated syllabication. Waugh and Howell (1975) commented on the Groff list and have said it should be entitled "Who's Who in Reading." All in all, those supporting syllabication seemed to be saying four things. First of all, syllabication is inextricably related to phonics. Secondly, it is a useful skill in learning how to spell. Thirdly, it is effective in training the student to conform to English writing conventions, and finally, it is useful as a tool in enabling the student to decode new words and pronounce them effectively.

Research Related to Syllabication

Spelling and Syllabication

With the exception of three studies, there has been a trend to study the impact of syllabication on spelling improvement via syllabified print. The amount

of space between individual syllables in syllabified print, depended on the experimenter. Words typed in syllabic print had spaces between their respective syllables as determined by the rules of graphic dictionary syllabication. For example: joy ful.

Three of the earliest studies used this method to investigate the impact of syllabication on spelling (Abbot & Kulman, 1909; Breed & Wolfe, 1922; Heilman, 1918). All of their results tended to support the value of syllabication in spelling. An explanation of their experimental designs is unwarranted since they lacked the sophistication of statistical tests of significance. A formation of any conclusion based on these studies would be highly tentative.

In 1923, Greene set out to determine if a syllabified and visual presentation of words would improve the spelling of those words. In this study a reliable statistical analysis was used. Greene used a total of 41 pupils in grades four, five and six. Greene selected words from data gathered for the Ashbaugh-Iowa Spelling Scale. Fifty words were selected for use in each grade. The students in each group were pre-tested for their ability to spell these 50 words. After the pre-testing, the words were divided into two sets of 25 words each. Over a 13 day period, students were alternately given a syllabified list or

unsyllabified list to study followed by periodic tests. About a week after the entire experiment a delayed recall test was given. The efficiency of this learning method was compared in four different ways: (1) the pupil's daily test record, (2) the pupil's growth over the preliminary test, (3) delayed recall, and (4) the number and percent of pupils reaching perfect scores in the daily tests and delayed reviews. Greene found a slight superiority in the lower grades in favor of the syllabified word list. This superiority held for the delayed recall test. However, when subjected to statistical analysis, the use of the syllabified word list did not reach significance. There were three weak areas in his study worth mentioning. They were: (1) the number of pupils was very small to warrant definite conclusions, (2) there was irregular attendance in certain grades, and (3) there may have been a carry-over effect in the learning of the syllabified word list to the learning of the unsyllabified word list. This supposition is warranted since no method of control prevented the children who used the syllabified form during the first half of the experiment to the last half which involved unsyllabified words.

In 1949, Horn set out to determine: (1) the effect of syllabic presentation of words upon learning to spell, and (2) which words, if any, of five selected generalized word types would benefit from syllabic

presentation. Horn's experiment had two parts to it. In Part I, 768 sixth graders were used comprising 33 classes. Each class was divided into two sections. One section had the words presented in syllabic form, and the other section received the words in undivided form. A set of 100 words was selected from the school district spelling book. An initial test was given on the 100 words. Part I of the experiment lasted four weeks with 25 words being introduced each of the four weeks. The 100 words were tested again at the end of the four weeks. The words were then given again to test delayed recall. There was a slight gain in the mean scores of the students who studied the syllabicated word list in both the recall and delayed recall test. However, this gain did not reach statistical significance.

In Part II of the Horn study, five selected generalized word types were investigated to see if syllabic presentation would benefit them, and to what degree. These word types were: (1) words in which there is no connection between syllabication and learning to spell, such as, remind and travel, (2) words which provide difficulty in pronunciation, for example, business and strictly, (3) words with prefix and suffix difficulties, for example, inspection and collection, (4) words with double consonant difficulties, for example, already and thankful, and (5) words which, if

syllabified, may cause spelling errors, for example, awhile and whatever. Over 1,000 fifth grade pupils were used for Part II. This experiment lasted five weeks and the words were divided according to syllabified and unsyllabified categories. Each of the five weeks, 25 words were given. Each set of words fell under one of the five specified categories. A pre-test, a recall-test and a delayed-recall-test were given. Horn made three conclusions: (1) syllabic presentation made no positive effect with any word group, (2) some words may be negatively affected by syllabic presentation, and (3) words that provide pronunciation problems were not aided by syllabic presentation.

Although Horn used proper statistical procedures, two possible problems were noted in his study. The first concerned the technique of using both the experimental and control method in each class. This may have provided an uncontrollable variable which could have affected the results. The second problem was the fact that Horn never specified the characteristics of the syllabified print. Exaggerated division of individual words may have caused disruption of a word's total configuration. It is interesting to note that in 1956, Horn did not abandon the use of syllabication. He later emphasized the structural benefits of using syllabication. Horn explained that in breaking words into their component

prefixes, suffixes and roots, syllabication had some merit in spelling improvement.

In 1966, Dailey wanted to see if the teaching of selected lessons in syllabication, with the words presented in visual and oral syllabic form, would improve spelling achievement. Dailey used 396 fourth graders. The control group which consisted of 192 pupils received instruction as outlined in the adopted textbook. Pronunciation exercises were provided in their lessons. The experimental group, consisting of 204 pupils, had words presented in visual and oral syllabic form and had their textbook replaced by selected lessons on syllabication. All students were pre- and post-tested with tests. They were: (1) a spelling test of 60 multisyllabic words taught during the instruction period, and selected from the spelling book used in the district, (2) a spelling test of 60 multisyllabic words which were not taught during the instruction period and which were selected from The New Iowa Spelling Scales, and (3) a syllabication test consisting of 88 multisyllabic nonsense words to be broken into syllables. The instruction period lasted for 12 weeks. The first week was used for pre-testing and the second week was used for post-testing. Analysis of both the pre- and post-test data showed that: (1) no significance was reached in the experimental group's

ability to spell the taught 60 multisyllabic words, (2) significance was reached in the experimental group's ability to spell the untaught 60 multisyllabic words, and (3) significance was reached in the experimental group's ability to use syllabication skills. Dailey concluded from this data that there was probably more value in presenting spelling words both as units and in oral and visual syllabic form together with selected lessons in syllabication. However, he proposed that his data was not sufficient to draw definite conclusions concerning the relationship between knowledge of syllabication and spelling achievement. A possible problem with the Dailey study was a lack of concern in explaining why the experimental group improved in their ability to spell the untaught words. Another weakness was the abbreviated set of syllabication rules that were taught. They were rules involving the situation of: (1) the pattern V/CV, (2) the pattern VC/CV, and (3) the tendency of "le" to form a syllable. These rules did not allow for exceptions nor did they include prefix, suffix and compound word division problems.

Word Pronunciation, Comprehension and Syllabication

The trend for over 50 years was to find out the impact of syllabication on spelling improvement. In 1958, Rettke broke this trend. Rettke wanted to see

if syllabified print would aid word pronunciation without hindering reading as a thought-getting process. He designed his experiment to investigate the immediate effect of a form of syllabified print on four aspects of reading. These were: (1) word pronunciation, (2) vocabulary, (3) comprehension, and (4) speed of comprehension. Fourth, fifth and sixth graders were used with 30 pupils in each grade. Students were divided in each grade as either good or poor achievers. Over a two week period each student was tested with the syllabified and the unsyllabified form of the test. Thus, each student was paired with himself as a control. The vocabulary test was from a section of the Gates Reading Survey, the paragraph comprehension test came from the Durrell-Sullivan Reading Achievement Test, the speed of comprehension test was taken from the Gates Basic Reading Tests, and the word pronunciation test (administered individually) was taken from the Wide Range Achievement Test. All four sets of tests were reproduced in both standard and syllabified print. The experimenter defined syllabified print as a single unit of space between individual syllables in a word as typed by an IBM Executive Typewriter. Rettke found that syllabified print proved significantly beneficial in word pronunciation for good and poor achievers and for fifth and sixth graders. Good achievers favored standard print, whereas

poor achievers favored syllabified print in the tests involving vocabulary, comprehension and speed of comprehension. What is important to note in this study is that: (1) Rettke defined the size of the space between individual syllables in the syllabified print, (2) an attempt was made to assess syllabication's impact on word pronunciation, and (3) distinctions were made between good and poor achievers.

In 1974, Canney purported that a pupil's ability to identify the number of syllables in a spoken word and to divide known words into syllables would transfer to words unfamiliar in graphemic form. To find this out, Canney designed a study to compare the effectiveness of dictionary syllabication instruction with instruction using graphoneme patterns in decoding unfamiliar polysyllabic words. Specifically, he sought to determine if second grade pupils could apply four rules (Treatment 1), or 17 graphoneme patterns (Treatment 2) to decode new words. Canney then wanted to assess the degree to which such training transferred to similar decoding tasks in a test setting. The syllabication rules used involved: (1) every syllable has a vowel sound, (2) divide between double consonants except if they form digraphs or blends, (3) a single consonant between two vowels goes with the second vowel, and (4) prefixes, suffixes and roots of words form separate syllables.

The graphoneme method was that originally proposed by Groff (1971b) developed by Jones (1970) as an alternative to syllabication. The graphoneme is a phonogram concept. Jones defined a graphoneme as a closed syllable which begins with a vowel and ends with a consonant (like an and et), semi-vowel (like ay and ew), or silent "e" (like ate and eme). Jones generated 80 high utility graphonemes when analyzing the Dechant (1964) list of 149 common words.

The design of the Canney study was complex. There were 108 second grade subjects used. Half of these students, 54 in all, were taught via a basal program, and the other 54 were taught through a phonics reading program. In each reading program there were three reading levels: high, average and low with six students falling under each of these categories. Between the graphoneme, syllabication and control groups there were six cells of six students each. Students were taught ten lessons of a 25 minute length. Lessons included both listening and written activities. There was a pre- and post-testing. The comprehension, syllabication, blending and sound recognition of the Stanford Diagnostic Test Level I was used. Also, a set of 30 stimulus words taken from the Word Frequency Book by Carroll, Davies and Richman (1971) were used to assess word decoding ability. Fifteen of these stimulus

words were used in isolation and 15 were used in a sentence context. Regarding the results in the Stanford Diagnostic Reading Test, Canney found: (1) no difference between pupils in a basal and phonics emphasis program, and (2) no difference between pupils in syllabication, graphoneme and control methods. Concerning the results on the stimulus word lists, Canney found: (1) the phonics program students scored higher on both tests of stimulus words than basal students, (2) no difference between graphoneme, syllabication and control group in their ability to identify words on the stimulus word list, and (3) pupils read significantly more stimulus words in isolation than in context. Canney concluded that his results were in conflict with Jones regarding the graphoneme method and that teachers should use caution when teaching either the graphoneme or syllabication method. One explanation Canney gave for the apparent failure of the instructional treatments was the fact that the 30 stimulus words may not have been in the listening vocabularies of a majority of the pupils tested. In a later study, Canney attempted to find out which meanings of the 30 words were already known by the second grade students. He found that the students knew a little over 50% of the words (1976a).

Three general areas of the Canney study can be questioned. First, the smallness of each cell which

distinguished the high, average, and low readers was not powerful enough to determine real differences. Second, the instructional period was too concentrated and may not have allowed enough time for the transfer of skills being tested. Third, second grade may be too young an age to teach these skills. Syllabication is the end result of phonics instruction since it presupposes a knowledge of all vowel and consonant sounds. It is also the beginning of structural analysis skills where emphasis is placed on prefixes, suffixes and compound words. For this reason many educators have proposed that syllabication be taught in third grade and above (Betts, 1957; Gray, 1949; McCullough & Tinker, 1975).

The final study to be examined was done by Marzano, Case, Debooy and Prochuruk in 1976. The purpose of this study was to examine the strength of the relationship between syllabication ability and comprehension. Marzano et al. felt that proportional gains in both skills would suggest that a gain in syllabication might bring about a gain in comprehension. The syllabication and comprehension subtests of Form W of the Stanford Diagnostic Reading Test Level II was administered as a pre-test to 275 corrective and developmental reading students attending a middle school in the fall of 1974 (specific grade level was not given in the study). Form X of the Stanford Diagnostic Reading Test was given as

a post-test in May, 1975. Gain scores for each student were then calculated in syllabication and comprehension. Through the Pearson Correlation Coefficient a very low correlation was found between syllabication and comprehension improvement. Marzano et al. concluded that the benefits in terms of increased comprehension ability would seem too small to justify the teaching of syllabication. Two things seem immediately questionable. First, no information was given on the teaching methodology or the types of syllabication rules taught. Second, the advocates of syllabication always proposed that the impact of syllabication would be realized in spelling and word pronunciation not comprehension (Betts, 1957; Cook & O'Shea, 1914; Dolch, 1938; Gray, 1948; Fry, 1972; Lamport, McCracken & Walcutt, 1974; Lesiak, 1977; McCullough & Tinker, 1975). It is unclear where Marzano et al. found support for their assumption that syllabication and comprehension can be correlated.

Summary

To date, no single piece of research can be used to conclusively disavow the use of syllabication in the classroom. To reiterate, the earliest studies did not use effective statistical tools to analyze their data (Abbott & Kulman, 1909; Breed & Wolfe, 1922; Heilman, 1918). The remaining studies that have used reliable

statistical analysis have either had: (1) small populations (Canney, 1974; Greene, 1923), (2) unspecified spacing in the syllabified print (Greene, 1923; Horn, 1949), (3) problems with the control group (Greene, 1923; Horn, 1949), (4) unspecified teaching methods or incomplete syllabication rules (Case, Debooy, Marzano & Prochoruk, 1976; Dailey, 1966), and (5) faulty choice of grade level not based on the reading literature (Canney, 1974).

Research Related to the Syllable as a Perceptual Unit

There are many research developments regarding perceptual units. Individual phonemes, syllables and words have all been proposed as perceptual units. There is no conclusive evidence regarding the syllable as both a visual and auditory perceptual unit. However, many pieces of research have more than implied that the syllable is a perceptual unit. Admittedly this research is tangential to the purposes of this study. However, two reasons warrant an inclusion of an analysis of this type of research. First, as was discussed in the previous section, there was very little conclusive evidence on the value of teaching syllabication for spelling and word recognition improvement. Although many educators have advocated the teaching of syllabication, the question remains: Is there a chunkable

reality both visually and auditorily in word perception? Second, since most of the arguments against syllabication by linguists rest in the disparity between syllabic breaks in spoken and written words, then it seems reasonable to ask: Are there any perceptual processes that integrate and tolerate divisional differences between the phonetic and graphic syllabic breaks in words? By no means will the following review of research be comprehensive. However, those strains of research that give insight into the above two questions will be examined.

The Syllable as an Auditory Perceptual Unit

In 1967, Liberman, Cooper, Shankweiler and Studdert-Kennedy set out to identify the conditions that underlie the perception of speech. While the whole process was not considered, they were interested in the part of speech that rests between the acoustic stream and a level of perception corresponding to the phoneme. One of the main points of their work was that individual phonemes, when subjected to a spectrographic analysis, are not discrete acoustically. For example, it is almost impossible to separate the phoneme "d" from "di" and "du." Liberman et al. concluded that in the case of "di" and "du," the individual phonemes are processed or heard at the same time and thus yield irreducible

segments of approximately syllabic dimensions.

Savin and Bever (1970) amplified the conclusions of Liberman et al. Through a series of experiments, they found that subjects, when given a preset target of either a syllable or phoneme, responded faster to the syllable. From their experiments, Savin and Bever proposed that individual phonemes can only be perceived from an analysis of already perceived syllables (the minimal syllabic unit being a consonant-vowel pair).

From this type of research Savin and Bever inferred: (1) syllables, in speech perception, are perceived before individual phonemes, and (2) the individual phonemes within a syllable are processed in parallel. These points have been made by other researchers besides Liberman et al. (1967) and Savin and Bever (1970) (Cole, 1973; Cole & Scott, 1974; Massaro, 1972).

If syllables are heart with more facility than phonemes, then teaching children to blend individual syllables into words should be an easier task when first learning how to read. This was the reasoning of Gleitman and Rozin (1973). They attempted to teach 12 kindergarten children how to read thorugh use of a syllabary. The syllabary contained 23 elements or syllables which were combinable into words. For example, "in" and "to" yield the word "into." Gleitman

and Rozin used a combination of a rebus with the individual syllables. From this, the 12 kindergarteners learned to recognize the meaning of new words. The instruction took between five to seven hours. Gleitman and Rozin proposed that a syllabary could serve as an introductory system and prepare the child for the more complicated study of phonics. While the experimental support was shaky in this study, criticisms such as Goodman's (1973) seem to miss the point. Gleitman and Rozin were reacting to the research in speech perception which was clearly giving credence to the fact that the syllable is an important perceptual unit. Much research is yet needed to verify the methodology of Gleitman and Rozin. However, their recommendations that the syllabary approach be used as a remedial method may be well founded. Six of the 12 kindergartners were from an urban environment. Also, in preliminary pilot studies eight second grade urban city non-readers proved responsive to this method. There is a parallel in this study with that of Rettke (1958) who found that poor achievers favored syllabified print over standard print in tests involving word pronunciation, vocabulary, comprehension and speed of comprehension.

The Syllable as a Visual Perceptual Unit

Since the home of the syllable rests in auditory perception, an analysis of it in visual perception becomes a complex issue. One of the avenues for understanding the syllable's impact on the graphemic representation of a word is through implicit speech. Implicit speech is the covert pronunciation of a word while it is being visually identified. In 1970, Eriksen, Pollack and Montague set out to examine certain aspects of covert verbalization in visual perception. The experimenters felt that if a word is implicitly spoken before it is overtly verbalized, then words containing different numbers of syllables would produce varying reaction times. Eriksen et al. used adult subjects and presented them with one- and three-syllable words. They found two important things: (1) upon onset of a light, latency of voicing did not differ between one- and three-syllable words when the subjects knew beforehand the word with which they were to respond, however, (2) three-syllable words significantly had longer latencies when reaction time from presentation of a word to initial voicing was measured.

Klapp (1971) proposed that the processing of syllables through implicit speech was not needed for comprehension of a word or number. Instead, he proposed

that the implicit speech process may only be required to set up the vocal apparatus for production of overt speech, while comprehension may occur with a latency independent of the number of syllables. Klapp attempted to prove this through a series of experiments. He had adult subjects respond to two different types of stimuli: two-digit numbers requiring two, three or four syllables and words of either one or two syllables. Subjects were required to make "yes" or "no" decisions based on whether or not an exposure of a number or word correlated with a previous exposure. Separate experiments were designed for number and word recognition. Klapp found a consistent and significant syllable effect on "yes-no" judgment latencies regardless of whether words or numbers were the stimuli. Thus, it took longer to process multisyllable two digit numbers and two-syllable words. Klapp proposed that a high-speed implicit speech was operating much faster than overt articulatory movements. This necessitated that implicit speech was involved in the comprehension of printed words and numbers.

The syllable effect was becoming well documented in reaction time tasks. Spoehr and Smith (1973) felt, however, that this effect would not occur in a task that measured tachistoscopic report accuracy. Spoehr and Smith proposed a sequentially three staged order of visual processing: (1) perceptual analysis or

identification of the stimulus (this was called the Analysis stage), (2) translation of the output of analysis into a phonological representation (this was called the Translation stage), and (3) covert pronunciation of the phonological representation in short-term memory (this was called the Implicit Speech stage). Since the Analysis and Translation stages operate on the readily available sensory or inconic information and since the Implicit Speech stage operates in phonological information then the syllable effect may be solely due to the Implicit Speech stage. However, if the syllable is a higher-order unit, then a variation in the number of syllables in a word would be a variation in the number of units that need to be processed during the Analysis and Translation stages. Spoehr and Smith proposed that the accuracy of a tachistoscopic report of a word would decrease with the number of syllables in that word.

In one of their experiments, Spoehr and Smith wanted to assess the syllable effect in the tachistoscopic report of one- and two-syllable words. Using adult subjects, one- and two-syllable words were flashed, immediately followed by a masking field. The subjects' task was to report the letters in the one- or two-syllable words they saw. It was found that letters in one-syllable words were reported more accurately than

those in two-syllable words. This finding correlated with Spoehr and Smith's proposal that a one-syllable word might require less Analysis and/or Translation processing than a two-syllable counterpart. From this finding, Spoehr and Smith proposed a vocalic center group as a higher order perceptual unit. A vocalic center group is derived from speech production work and is specified by the rules governing the articulation of phonemes and phonemic clusters. More specifically, a vocalic center group is an element that contains a single vowel or dipthong and may have from zero to three consonants or semi-consonantal elements preceding or following the vowel. The vocalic center group is virtually a syllable. When a letter string is perceived, the perceptual parsing process follows in this manner: (1) VCV = V+CV, (2) VCCV = VC+CV, and (3) VCCCV = VC+CCV. If the above parsing is an inappropriate representation of the phonological representation then a recycling occurs. The parsing becomes: (1) VCV = VC+V, (2) VCCV = V+CCV, and (3) VCCCV = V+CCCV. Spoehr and Smith proposed that after a word has been parsed consistently with the phonological representation, then it is transferred to short-term memory where it is maintained by implicit speech. Spoehr and Smith explained that one-syllable words were reported more accurately because they contained fewer vocalic center

groups to analyze and/or translate. The major problem for Spoehr and Smith was specifying whether the perceptual parsing process occurred before the Analysis stage or after Analysis and before the Translation stage. In analyzing this problem, Spoehr and Smith proposed a Unitization-after-Analysis model of word perception. This Unitization stage is the parsing process and occurs before the Translation stage.

Implications for Syllabication

From the various studies that have been examined, it can be said that the syllable is a chunkable reality both visually and auditorily. Whether through spectrographic analysis, reaction time experiments or tachistoscopic reports the syllable has displayed its perceptual importance both visually and auditorily. According to the research of Spoehr and Smith (1973) there are perceptual processes that integrate and tolerate divisional differences between phonetic and syllabic breaks in words. As seen by the parsing classification of Spoehr and Smith there may possibly be syllabication generalizations that have psychological reality. It is important to examine where disparity between phonetic and graphic syllabic division occur. The argument then rests in where to impose syllabic boundaries. The purpose of this study is to settle

this argument.

Research on the Utility of Syllabication Generalizations

Wanting to know the percentage of utility of accepted phonics generalizations has been the desire of reading people for a long time. In 1952, Oaks reviewed the major studies which had attempted to analyze "vowel situations" in words. She then designed her own study which attempted, through selected generalizations to look at the vowel situations as they occurred in the vocabularies of basal readers. Oaks looked at words with a total of 2,503 syllables in basal readers from primer to third grade. She took a count of the number of times a generalization applied or did not apply to a selected syllable. She then listed in descending order the importance of selected generalizations according to grade level. Generalization seven involved the rule for syllabic "l," and rule eight involved syllabic "n." She found that these two generalizations were "basic to the pronunciation of vowel letters," and that they both were used 100% of the times that they were applied in primer through third grade books.

Both the Burrows and Lourie study of 1963, and the Winkley study of 1966 were tangential to the generalizations used in this study. However, they were worth mentioning. Burrows and Lourie attempted to

analyze the "two - vowels - together - rule" by applying it to the five thousand words of highest frequency on the Rinsland list of 1945. They didn't find the vowel diagraph rule consistent. What was important in this study was the use of the Rinsland list. By looking at the top five thousand words, they were getting closer to a body of words that children saw more often. Breen (1960) also used the Rinsland list to take a frequency count of prefixes, suffixes, and root derivations. In 1966, Winkley took 18 selected accent generalizations from Gray's book On Their Own in Reading of 1948. She applied these generalizations to 10,896 words selected from the Dale and Eichholz list of 1960, and the Diederich and Palmer list of 1956. According to her findings only 12 generalizations were worth teaching.

Clymer, in 1963, concerned himself with five types of generalizations. These dealt with: (1) vowels, (2) consonants, (3) endings, (4) syllabication, and (5) miscellaneous relationships. From these categories, he developed 45 generalizations. He drew his words from the four basic reading series in the primary grades from which the generalizations had been taken, and the Gates Reading Vocabulary for the Primary Grades. The number of the body of words he used was 2,600. Each phonic generalization was checked against the words to determine

the amount of times it was used out of the amount of times it applied. A percentage of utility was computed by dividing the number of words pronounced as the generalization claimed, by the total number of words to which the generalization was expected to apply. Two cut-off criteria were used: (1) a minimum of 20 words had to apply to a selected generalization for it to be considered useful, and (2) a percent of utility of at least 75 had to be reached for acceptability. Of the generalizations used, 14 involved syllabication and accent. Of the 14, only six of these generalizations were related to the present study because the others involved accent. Out of these six, only two generalizations proved acceptable according to the Clymer criteria (see Table 1). Clymer pointed out that 75% as a criteria may have either been too high or too low.

Emans, in 1967, followed a similar procedure as Clymer. Whereas Clymer looked at phonic generalizations and their usefulness in materials of the primary grades, Emans looked at materials above the primary grades. Emans took a random sample of 10% of the words, 1,944 in all, beyond the primary level of grade four in The Teacher's Word Book of 30,000 Words by Thorndike and Lorge of 1944. Emans used the same criteria of judgment as Clymer together with the same 45 generalizations. Out of the six generalizations applicable to the present

TABLE 1

SYLLABICATION RULES TAKEN FROM THE CLYMER STUDY

	Author of Study			
	Clymer	Bailey	Emans	Parker
#37. In many two and three syllable words, the final "e" lengthens the vowel in the syllable.	46%	46%	42%	34%
#38. 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.	72%	78%	80%	85%
#39. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable.	44%	50%	47%	53%
#40. If the last syllable of a word ends in "le," the consonant preceding the le usually begins the last syllable.	97%	93%	78%	98%

TABLE 1 (Continued)

	Author of Study			
	Clymer	Bailey	Emans	Parker
#41. When the first vowel element in a word is followed by "the, ch, or sh," these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.	100%	100%	100%	100%
#42. In a word of more than one syllable, the letter "v" usually goes with the preceding vowel to form a syllable.	73%	65%	40%	30%

study, Emans found three to be acceptable (see Table 1). Based on the information he obtained, Emans wrote an article recommending 18 special phonics generalizations including syllabication rules.

Bailey, in 1967 followed the same criteria as did Emans and Clymer, together with the 45 phonics generalizations. This time, however, the list of words included those selected from eight basal readers in grades one through six. A composite list of 5,773 words resulted. Out of the six syllabication generalizations used, three of them met the 75% cut-off point. Parker (1968) also followed the example of Clymer when he took the same 45 phonics generalizations and applied them to vocabulary developed from elementary social studies books in grades four, five and six. Words utilized in the investigation numbered 2,613 and were drawn from 51 textbooks. The same criteria for assessment used in the Clymer study was also used for this one. Out of the six syllabication generalizations, only three proved acceptable. Note Table 1 for a comparison of the data obtained by Clymer, Emans, Bailey, and Parker.

Burmeister (1966) selected a set of important phonics and syllabication generalizations that were differently worded from those used by Clymer, Emans, Bailey, and Parker. The syllabication generalizations

were divided according to the following categories: (1) single vowels, (2) vowel combinations, (3) structure syllabication, and (4) phonic syllabication. Combining some rules with their exceptions, Burmeister assessed 13 syllabication generalizations. She chose her sample words from The Teacher's Word Book of 30,000 Words by Thorndike and Lorge (1944) at 14 different "frequency of occurrence" levels. She took a 5% random sample at each of 11 levels for words which occurred from six to over 100 times per million running words, and a smaller sample at three levels for words which ranged in frequency from one to five occurrences per million running words. The generalizations selected were based on materials at the fourth grade level and above, and also on her own teaching experiences. Percentages were calculated by dividing the number of words pronounced, as the generalization claimed, by the total number of words to which the generalization applied. This was the same procedure as Clymer, Bailey, Emans, and Parker. However, Burmeister did not use the two criteria set up by Clymer involving the minimum of 20 applications and the 75% utility. Because of this, Burmeister only listed the percentages she obtained (1966, 1968a). However, in an article in the Reading Teacher (1968b), she made recommendations based on the research done in her doctoral dissertation of 1966. She claimed that

six of the generalizations were worth teaching and three of the generalizations were considered of limited usefulness (see Table 2).

McFeely's study was the only one directly designed to deal with syllabication generalizations. In 1972, he attempted to determine the applicability of eight syllabication generalizations in a vocabulary developed from selected basal readers and social studies texts. These texts were part of the Macmillan Series and the Scott, Foresman Series. McFeely compared the basal vocabulary to the social studies vocabulary, and his findings with the findings of previous investigators. He rephrased and combined generalizations in hopes of raising the percentage of utility. Instead of the usual standard dictionary division, he used a phonetic division. In assigning specific syllabication tallies, preference was always given to suffixes and prefixes. For example, the word "hav-ing," could possibly be syllabicated through two different generalizations, one involving the pattern VCV, and another involving the syllabic nature of suffixes. McFeely also used the same criteria of assessment as Clymer, Bailey, Emans, and Parker. The total number of words compiled were 7,660. Vocabulary lists were organized by grade levels three, four, five and six. Each grade level vocabulary was subdivided into eight lists to correspond to the eight syllabication

TABLE 2

UTILITY OF SYLLABICATION RULES TAKEN FROM McFEELY STUDY

Rule	Author of Study	[a]Macmillan Series	[b]Scott Foresman
I.	Structural Syllabication		
A.	Divide between a prefix and a root.	Burmeister 95%	McFeely[a] 98%	McFeely[b] 97%
B.	Divide between two roots.	Burmeister 95%	McFeely[a] 95%	McFeely[b] 94%
C.	Divide between a root and a suffix.	Burmeister 74%	McFeely[a] 81%	McFeely[b] 81%
II.	Phonic Syllabication		
A.	Situation VCCV		
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.	Clymer 72%	Emans 80%	Bailey 78%	Parker 85%

TABLE 2 (Continued)

Rule	Author of Study	[a]Macmillan Series	[b]Scott Foresman

2. When you have a cluster of two different consonant letters usually you divide the word into syllables between the two letters of the cluster except when that cluster forms a digraph or blend.

McFeely[a]	McFeely[b]
85%	84%

3. When a vowel element is followed by a cluster of two like consonants "tt" or the clusters "th, ck, ch, and sh," these clusters are not divided and the cluster usually ends the syllable.

McFeely[a]	McFeely[b]
74%	71%

4. When the first vowel element in a word is followed by the letters "th, ch or sh," these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.

Clymer	Emans	Bailey	Parker
100%	100%	100%	100%

5. When two vowel sounds are separated by two consonants, divide between the consonants but consider "ph, ch, and th" to be single consonants.

Burmeister
94%

TABLE 2 (Continued)

Rule	Author of Study	[a]Macmillan Series	[b]Scott Foresman

B. Situation VCV

1. If the first vowel sound in a word is followed by a single consonant that consonant usually begins the second syllable.

Clymer	Emans	Bailey	Parker
44%	47%	50%	53%

2. When two vowel sounds are separated by one consonant, divide before the consonant but consider "ph, ch, and sh," to be single consonants.

Burmeister
69%

3. A single consonant between two vowels usually goes with the second vowel to form a syllable except when that consonant is "r."

McFeely[a]	McFeely[b]
54%	52%

4. When "r" follows a vowel, the "r" usually belongs in the syllable with the vowel it follows.

Burmeister	McFeely[a]	McFeely[b]
46%	50%	50%

TABLE 2 (Continued)

Rule	Author of Study	[a]Macmillan Series	[b]Scott Foresman
C.	Situation "le": If the last syllable of a word ends in consonant le, the consonant usually begins the last syllable.		
	Clymer 97%	Emans 78%	Bailey 93%
	Parker 98%		
	Burmeister 93%	McFeely[a] 60%	McFeely[b] 59%
D.	Situation blend: When a word contains a blend, the blend usually begins the syllable.		
	McFeely[a] 100%	McFeely[b] 100%	

generalizations. Out of the eight generalizations used, he found that prefixes and suffixes had consistently higher percentages of utility from grade level to grade level. Table 2, taken from the McFeely study, compared the data regarding syllabication from the Clymer, Emans, Bailey, Parker, Burmeister, and McFeely studies.

Some Word Frequency Studies

There have been many frequency counts of words. Without attempting to analyze all of these frequency counts, a few major works were worth mentioning. In 1921, Thorndike published his Teacher's Word Book. It contained 10,000 words which were found to occur most frequency in a count of 625,000 words from children's literature, the Bible, English classics, daily newspapers, correspondences, and books of cooking, sewing and farming. He expanded his original study twice. In 1932, he published Teacher's Word Book of 20,000 Words and in 1944, he published as even more extensive list, Teacher's Word Book of 30,000 Words. One drawback to the Thorndike list according to Howes (1971) was the fact that the list did not account for the difference between spoken and printed language.

In 1945, Rinsland published his A Basic Vocabulary of Elementary School Children. Rinsland accumulated his data by writing to schools in all

parts of the country requesting "free writing" of children. He received letters, compositions, stories and poems from schools in many states and from rural and urban schools. He studied more than 100,000 individual papers containing 6,012,359 running words. Of these, 14,571 words occurred three or more times at one grade level. He grouped words by hundreds, five hundreds and thousands. In analyzing words he used plurals, contractions, and abbreviations unlike Thorndike who used a lexical unit.

In 1967, Kucera and Francis published a Computational Analysis of Present-Day American English. The corpus included a body of 1,014,232 words of "natural language" text, coded for processing on IBM and other types of data processing equipment. The corpus was divided into 500 samples of approximately 2,000 words each. The texts chosen represented a wide range of styles. Only materials written in the United States and first printed in 1961 were used. The 500 samples were distributed among 15 categories, representing the full range of subject matter and prose styles, from the sports page of the newspaper to the scientific journal, and from popular romantic fiction to abstruse philosophical discussion. The number of words assigned to specific categories depended upon the consensus of those taking part in the categorizing. An individual word

was defined as a continuous string of letters, numerals, punctuation marks, and other symbols uninterrupted by space. The graphic, rather than the phonemic or lexical word was used. The major distinguishing element in this frequency count was the use of the computer (Kucera, 1969).

The Word Frequency Book by Carroll, Davies, and Richman (1971) was influenced by the work of Kucera and Francis. The material looked at in this count was taken from grades four through eight. However, grades three through nine were included to avoid any sharp cut-offs in vocabulary at the high and low ends. Among the samples were textbooks, periodicals, encyclopedias, novels, and student workbooks. Surveys, concerning materials being used in the schools were sent out to 155 school systems. From these 155, only 71 responded. Out of the total number of tokens assembled, 5,088,721 were used. The corpus contained 86,741 different word types. The authors defined a token as the word frequency, and the type as a particular word. For computer purposes, as with the Kucera and Francis study, a word was defined as a string of graphic characters bounded left and right by space. Because of this, graphic characters permitted in the string analyzed, included letters of the alphabet, numerals, internal punctuation, certain mathematical symbols, and a very few coded characters. The Word

Frequency Book, to date, was the most recent and comprehensive attempt to account for the frequency of words in the American school lexicon.

Summary of Chapter II

Many divided views on the issue of syllabication were examined. The main argument among the reading specialists was the fact that in using syllabication, the knowledge of the spoken word sometimes presupposes a use of the rule. The argument of the linguists rested in the uncertain boundary of syllabic breaks. Linguists claimed that teaching rules of syllabication involve the learning of arbitrary rules. These rules, in most cases, have nothing to do with the spoken syllable. The advocates defended syllabication because of its proposed usefulness in word pronunciation, spelling and training in the conventions of hyphenation. Research remains inconclusive on syllabication's impact on spelling and word pronunciation. However, syllabified print does improve word decoding ability. Research related to the syllable as a perceptual unit was examined. It has been found that the syllable was an important perceptual unit in both auditory and visual perception. It was pointed out, that if the syllable acts as an important perceptual unit both visually and auditorily, then the argument rests in where to impose the syllabic boundaries.

Research on the utility of selected syllabication generalizations has been minimal. The work of Clymer (1963), Bailey (1967), Emans (1967), and Parker (1968) investigated the utility level of 45 selected phonics generalizations. Six of these were rules on syllabication. Burmeister in 1966, also studied a selected set of important phonics generalizations. Among these were some rules on syllabication. A study directly dealing with syllabication was done by McFeely in 1972. He took eight generalizations and syllabicated words using the phonetic division only.

An examination of some important word frequency studies was made. Inclusive of these were the works of Thorndike (1944), Rinsland (1945), Kucera and Francis (1967) and the most current Carroll, Davies, and Richman (1971).

CHAPTER III

PROCEDURE

The purpose of this study was to assess the Fry list of syllabication generalizations against a body of words to see what percentage followed the rules. Two sets of words were used. The easy words were taken from the top 2,500 of the Word Frequency Book, and the hard words were randomly selected from the Thorndike Barnhart Advanced Dictionary.

Selection of Words from the Dictionary

To find an appropriate dictionary, several pilot studies were done using words taken from Webster's Third New International Dictionary (1971) and Webster's New Collegiate Dictionary (1976). The phonetic division of individual words was complicated and often syllabic breaks were not recorded due to elaborate linguistic justifications in Webster's Third New International Dictionary. In Webster's New Collegiate Dictionary, the schwa sound was often omitted as a justifiable break in the graphic division. Thus, the word "a-bout" was recorded as monosyllabic. The Thorndike Barnhart Advanced Dictionary (1974) was finally chosen because

of its clear and conservative approach in both the phonetic and graphic divisions of words. The fact that this dictionary has been a popular tool in many schools also emphasized the importance of its use in this study. There were 1,186 pages with three columns on each page. Starting with page one, the top word in the third column on every other page was selected. After all pages were depleted, the top word from the third column of the skipped page was selected. If, however, any one of these words were monosyllabic, proper nouns, uncommon foreign words, abbreviations, root words, or hyphenated, then the word immediately following the top word in the third column was selected. If the top word in each column duplicated a word already taken from the easy words in the Word Frequency Book, then the next word was selected.

Selection of Words from the Word Frequency Book

The top 2,500 words were first selected and carefully analyzed. Due to the computer definition of a word, many spurious elements were contained in this list that could not be used in the study. Hence, numerals, single letters, contractions, proper names, monosyllabic words, and plurals that were duplicated by the singular representation were not used. If a multisyllabic, plural noun came before the same multisyllabic,

singular noun, then the plural was chosen over the singular representation. If a word was represented in the sample in different forms then both forms were selected. The judgment on this procedure was based on the fact that a suffix added to a word meant an added syllable that could be readily accessible to the analysis of the syllabication generalizations. Thus, words like "follow" and "following" were both used. After filtering out the unusable elements in the top 2,500 words, only 1,000 were selected.

The Fry Syllabication Generalizations

The generalizations tested were those cited by Fry (1977) and slightly revised through the pilot studies in cooperation with the present writer. These generalizations were selected as being the most extensive in the reading literature. Typically for the reading field these rules were prescriptive and based on face validity. They were developed through practical experience. They represent a generalizable sample of rules taught to children.

In the Fry rules, three major areas were considered primary determinants of division: (1) the phonetic breaks caused by individual vowels and vowel elements, (2) structural elements involving prefixes, suffixes, and compound words, and (3) division problems

involving the patterns VCV, VCCV, and VCCCV. There were 23 generalizations in all (see Figure 1). In the situation of generalizations governing the division of specified dipthongs, digraphs, broad "o," r-controlled vowels and silent "e" at the end of a word, tallies were kept when any one of these elements occurred in a word and did or did not determine a syllabic break.

Concerning structural elements, generalizations were written for prefixes, suffixes, compound words and the suffix "y." Rules were also written to accommodate the exceptions to the suffixes "s" and "ed."

Concerning the situation of the pattern VCV, rules were written to specify the difference between syllabic breaks that occurred when the first vowel was either unaccented or accented. In the situation of VCCV and VCCCV, certain blends were given priority and not divided. They were: (1) the "r" family initial blends like "pr, gr, cr, fr, tr, br, and dr," (2) the "s" family blends like "sp, sc, sn, sm, sk, sl, and sw," (3) the "l" family blends like "pl, cl, bl, fl, and gl," and (4) special situations like "tw" or the three letter blends "str" and "scr." It was important to make an exception for the initial blend "st" since this was often divided. Note Figure 1 for a listing of the 23 generalizations.

FIGURE 1

FRY'S SYLLABICATION GENERALIZATIONS

1. Every syllable must have a vowel sound; for further consideration see below.

   a. Final "le" picks up the preceding consonant to form a syllable. For example: ta-ble.

   b. At the end of a word, "l, m, and n," will form a syllable. For example: pris-m.

   c. Two vowels together with separate sounds form separate syllables. For example: ar-e-a.

   d. Dipthongs like "oi, oy, ou, and ow" are not separated. For example: thou-sands.

   e. Digraphs like "ea, ee, ai, ay, oo, oa, and ow" are not separated. For example: fea-ture.

   f. Broad "o" sounds like "au, aw, and al" are not separated. For example: au-di-ence.

   g. R-controlled vowel sounds like "ar, er, ir, or, and ur" are not separated. For example: ar-ti-cle.

   h. The letter "y" at the end of or in the middle of a word always makes a vowel sound and hence a syllable. For example: ver-y.

   i. The letter "e" at the end of a word is always silent. More specifically, the "e" is silent when it follows consonants preceded by a vowel. This rule applies to: (1) monosyllabic words like "come" and "some," (2) compound words like "home-mak-er," and (3) in divisions formed by syllabication like "hate-ful."

2. Structural elements in a word

   a. Prefixes form separate syllables. For example: go-ing.

   b. Suffixes form separate syllables. For example: na-tion-al.

FIGURE 1 (Continued)

c. Suffixes form separate syllables and when they follow double consonants the suffixes pick up one of the consonants. For example: get-ting.

d. The suffix "ed" when followed by "d" or "t" forms a separate syllable. For example: plant-ed.

e. The suffix "ed" does not form a syllable when followed by letters other than "d or t." For example: let-tered.

f. The suffix "s" does not form a syllable. For example: at-oms.

g. The suffix "s" does form a syllable, however, when it is preceded by the letter "e." For example: cour-ses.

h. The suffix "y" tends to pick up the preceding consonant or blend. For example: fligh-ty.

i. Compound words form separate syllables. For example: air-ship.

3. The situation of the pattern VCV

a. A consonant between two vowels tends to go with the following vowel. For example: bro-ken.

b. A single consonant between two vowels will go with the preceding vowel if it is accented and short. For example: wag-on.

4. The situation of the pattern of VCCV and VCCCV

a. If there are two consonants between two vowels then they are divided. For example: pic-ture.

b. Consonant clusters such as beginning blends and consonant digraphs are not divided and go with the following vowel. St is the only exception to this situation. For example: mi-grate.

FIGURE 1 (Continued)

c. When three consonants come between two vowels, division occurs either before or after the blend or digraph in the three consonant combination. For example: an-gler.

Methodology

1. Procedure for organizing words and syllabication tallies:

   a. All words were written on index cards together with their phonetic spelling, and filed separated according to two categories of easy and hard words.

   b. All words were alphabetized and indexed according to their original source. In the case of the easy words, the number of the word's original position in the frequency count was written on the card. In the case of the hard words, the page and column numbers were placed on the card.

   c. All words had recorded on their cards the syllabication generalizations used in both the standard and phonetic division.

d. Four tally sheets were kept for the syllabication of the words. Two were for the easy words and two were for the hard words. Under each of the easy and hard words, one tally sheet was kept for the standard division and one for the phonetic division.

e. Each syllabication generalization had a "yes" or "no" category. "Yes," symbolized as "y," stood for a tally of compliance to a generalization. On the other hand, "no," written as "n," stood for a tally of noncompliance.

f. Percentages were obtained by dividing the total number of applications by the number of cases complying to the generalizations.

2. Criteria for judgments of the generalizations:

a. Based on the Clymer criteria of 1963, 75% was considered the lowest assessment point acceptable, together with a 20 application limit.

b. When graphic and phonetic divisions were compared with one another in both easy and hard word lists, a ten percentage

point difference was considered consistent. This was an arbitrary measure set by the experimenter.

c. Where no double tallies were involved, the number of rules counted was always one less than the number of syllables.

d. If a generalization applied to two different syllables within a word, then it was given two tallies. For example: im-por-tant (Two counts for generalization 4a.)

e. If a word, in the phonetic division had two different pronunciations, then both were given a tally. For example: bi-cy-cle became either bi-sik-al or bi-sa-kal. In this case the phonetic division for the second syllable received a la(y) and a la(n) count.

f. Double counts were given in any word that involved diphthongs, digraphs, broad "o," r-controlled vowels, and silent "e" at the end of the word. Double counts were also necessitated if suffixes were preceded by double consonants or if the suffixes "ed" and "s" were involved in a syllabic break.

g. An extra count was taken for every time a silent letter was dropped in the phonetic division. For example: ac-count (The graphic division or GD was given a 4a (yes) count but the phonetic division or PD was given a 4a (no) count with a tally under the X category to signify a dropped letter.)

h. For purposes of this study, the symbols EWGD meant easy-word-graphic-division, EWPD meant easy-word-phonetic-division, HWGD meant hard-word-graphic-division, and HWPD meant hard-word-phonetic-division.

i. To uphold interrater reliability, Fry spot-checked the syllabication of several words and those words that presented difficulty were discussed separately before any syllabication rule was assigned to them.

j. Two words in the hard list were not syllabicated due to their irregular vowel and/or consonant combination. These words were "asthma" and "cuisine."

CHAPTER IV

RESULTS

This chapter will present the results of the percentage of utility of the Fry syllabication generalizations as they were applied to two sets of 1,000 words each. The first set of 1,000 words were defined as easy and were taken from the Word Frequency Book by Carroll, Davis, and Richman (1971). The second set of 1,000 words were defined as hard and were selected randomly from the Thorndike Barnhart Advanced Dictionary (1974). Each set of words was syllabicated both graphically and phonetically. The major questions asked were:

1. How did the percentage of utility of the generalizations compare in both the easy and hard lists of words when 75% was used as a final assessment point of acceptability together with a 20 application limit?
2. How did the percentage of utility compare within generalizations when both the phonetic division and the graphic division were used as assessments of syllabic breaks?

3. How did the percentage of utility compare with those findings from previous studies?

The results of each rule and a discussion of the information provided in answering questions one, two and three will be presented. After this, a summary of all data in terms of those elements most relevant will be discussed. Finally, a comparison of this study's results with previous studies will follow. In all tables, "y" stood for yes or how many times a rule was used and "n" stood for no or how many times it was not used. EWGD stood for easy words graphic division. EWPD stood for easy words phonetic division. HWGD stood for hard words graphic division. HWPD stood for hard words phonetic division.

The Utility Levels of the Fry Syllabication Generalizations

Generalization 1a

Final "le" picks up the preceding consonant to form a syllable. For example: ta-ble.

This rule was only used 38 times in the syllabication of the easy words and 37 times in the syllabication of the hard words. Exceptions to this rule were unique. However, they did follow a pattern. Usually an exception was the result of a silent letter preceding the "le." For example the word "mick-le" was an exception in both the graphic division and the phonetic division due to

the silent letter in the blend "ck." The word "bot-tle" was an exception to the phonetic division of the easy words due to one of the double consonants being silent. In both graphic divisions and phonetic divisions, rule 1a was used consistently coming within the 10 percentage point limit. It met both the 20 application criteria and went above the 75% limit.

See Table 3 for the data on generalization 1a.

TABLE 3

UTILITY OF SYLLABICATION GENERALIZATION 1a IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1a	97%	94%	97%	92%
incidences	37(y) 1(n)	35(y) 2(n)	36(y) 1(n)	34(y) 3(n)

Generalization 1b

At the end of a word, "l, m, and n," will form a syllable. For example: pris-m.

Surprisingly enough, this rule was not used. The assumption of its usefulness made a discussion on its lack of utility a worthwhile endeavor. The example "pris-m" as an illustration of this rule must be clarified. In actuality, there was no dictionary that

recorded a syllabic break in this word's graphic division. The phonetic division of this word was recorded as "priz-m." Technically, there was a schwa sound prefacing the "m." All in all, phonetically some sort of break was heard, while graphically, it was not recorded. The word "prism" was not even used among the easy and hard word lists in this study, but was listed as an example to illustrate the phonetically syllabic nature of "m" in this situation.

In situations where syllabic "n" or syllabic "l" came up, other rules took priority over rule 1b. For example, the word "bot-tle" phonetically looked like this: "bot'l." However, it was presupposed in rule 1a that the "e" followed the "l" in the "le" pattern would be silent. Also, in a situation where a double twin consonant preceding the "le" pattern was dropped, it was recorded in the phonetic division as a negative count with an "X" tally. In the situation of the word "cho-sen" the phonetic division looked like this: "cho-zn." Again, it was presupposed that the "e" in the suffix "en" would either be a schwa sound or silent. From the viewpoint of rule 1b, the suffix "en," phonetically was a syllabic "n." However, for purposes of this study as with rule 1a, rule 2b concerning suffixes, was given first priority as a determinant of syllabic division. Syllabic "l, m, and n" were

strictly a phonetic phenomenon with other syllabication generalizations taking priority.

Generalization 1c

Two vowels together with separate sounds form separate syllables. For example: vi-o-let.

As a source of division in the easy words, this rule was used a total of 30 times. As a source of division in the hard words, it was used a total of 26 times. There were no (n) counts for this rule. However, while the 75% utility level was met, the 20 application limit was just barely met. This generalization was obviously an infrequent yet highly consistent rule since graphic and phonetic division both achieved 100%. Rule 1c served often as an exception to rules 1d, 1e, 1f, and 1g all concerning dipthongs, digraphs, broad "e," and r-controlled vowel sounds. Note Table 4 for a listing of the data.

TABLE 4

UTILITY OF SYLLABICATION GENERALIATION 1c
IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1c	100%	100%	100%	100%
incidences	30(y)	30(y)	26(y)	26(y)

Generalization 1d

Dipthongs like "oi, oy, ou, and ow" are not separated. For example: thou-sands.

Tallying this rule involved more than counting every time the dipthong ended a syllable and was broken or not. It also involved a count of every time the dipthong was graphically present within a word and retained its intactness. The 75% utility level with a 20 word application limit was met. In the easy word category, the rule was used 59 times with one negative count. In the hard word category, the rule was used 57 times without any negative counts. There was phonetic and graphic consistency in this rule. Note Table 5 for the data on generalization 1d.

TABLE 5

UTILITY OF SYLLABICATION GENERALIZATION 1d IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1d	98%	98%	100%	100%
incidences	58(y) 1(n)	58(y) 1(n)	57(y)	57(y)

Generalization 1e

Digraphs like "ea, ee, ai, ay, oo, oa, and ow" are not separated. For example: fea-ture.

As with generalization 1d, this rule involved more than a count of every time a vowel digraph caused a syllabic break. Again, graphical presence in a word together with intactness was a part of this digraph count. Both the 75% utility level with the 20 word application limit were met. In the easy word count, this rule was used 123 times with six negative counts. In the hard word count, rule 1e was used 141 times with eight negative counts. Exceptions to conformance to this rule were of the type: "i-de-al" and "nau-se-a." In both of these cases, a negative count for rule 1e necessitated a positive count for rule 1c. Conformity was fairly constant between the phonetic and graphic divisions meeting the acceptable 10 percentage points. Table 6 lists all data on generalization 1e.

TABLE 6

UTILITY OF SYLLABICATION GENERALIZATION 1e IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1e	95%	95%	94%	94%
incidences	117(y) 6(n)	117(y) 6(n)	133(y) 8(n)	133(y) 8(n)

Generalization 1f

Broad "o" sounds like "au, aw, and al" are not separated. For example: au-di-ence.

Tallying rule 1f followed the same procedure as 1d and 1e. Both the 75% utility level and the 20 word application limit were met. In the easy word divisions, rule 1f was used a total of 79 times with four negative counts. In the hard word divisions, rule 1f was used 92 times with five negative counts. Conformity was maintained between phonetic and graphic divisions and easy and hard words. All percentages came within 10 percentage points of one another. Negative counts involved words like: "a-le-a-to-ric" and "a-li-as." Note Table 7 for the listing of the data obtained for generalization 1f.

TABLE 7

UTILITY OF SYLLABICATION GENERALIZATION 1f IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1f	95%	95%	95%	95%
incidences	75(y) 4(n)	75(y) 4(n)	87(y) 5(n)	87(y) 5(n)

Generalization 1g

R-controlled vowel sounds like "ar, er, ir, or, and ur" are not separated. For example: ar-ti-cle.

Again, a tallying of this generalization followed the same procedure as rules 1d, 1e, and 1f. It must be noted that in many cases double counts were given since 1g sometimes overlapped with generalization 4a. Generalization 4a always involved the VCCV pattern. Since "r" was a unique consonant controller of preceding vowels, it was felt a double count was justified. Both the 75% utility level together with the 20 word application limit were generously met. The excessive amount of times 1g was used underscored its usefulness. In the easy word division, it was used 368 times with 29 negative counts in the graphic divisions, and 23 negative counts in the phonetic divisions. In the hard word list, it was used 348 times with 29 negative counts in the graphic divisions, and 26 negative counts in the phonetic divisions. The ten percentage point limit was met. Negative counts were caused by patterns in words such as "a-round" and "a-ris-en." It was important to note that the "a" in the "ar" combination above was always a schwa sound. Thus, words possessing a syllabic break of this nature fell under generalization 3a. Disparity between both the phonetic and graphic divisions was low. Note Table 8 for all data on

generalization 1g.

TABLE 8

UTILITY OF SYLLABICATION GENERALIZATION 1g
IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1g	92%	93%	92%	93%
incidences	339(y) 29(n)	345(y) 23(n)	319(y) 29(n)	322(y) 26(n)

Generalization 1h

The letter "y" at the end of or in the middle of a word always makes a vowel sound and hence a syllable. For example: ver-y.

If anything, this rule amplified the bigger assumption that to have a syllabic break there must be a vowel sound. This rule made the 75% utility level and modestly met the 20 application limit. In the easy word divisions, rule 1h was used 34 times without any negative counts. In the hard word division, rule 1h was used 43 times without any negative counts. This rule was consistent in both the graphic and phonetic divisions becuase it came within ten percentage points. Note Table 9 for all data on generalization 1h.

TABLE 9

UTILITY OF SYLLABICATION GENERALIZATION 1h
IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1h	100%	100%	100%	100%
incidences	34(y)	34(y)	43(y)	43(y)

Generalization 1i

The letter "e" at the end of a word is always silent. More specifically, the "e" is silent when it follows consonants preceded by a vowel. This rule applies to: (1) monosyllabic words like "come" and "some," (2) compound words like "home-mak-er," and (3) in divisions formed by syllabication like "hate-ful."

This generalization served as another amplification of the assumption that to have a syllable there must be a vowel sound. Therefore, tallying the utility of this generalization became a procedure of counting every time the letter "e" followed the pattern specified by generalization 1i. This rule reached the 75% utility level together with the 20 application limit. It was used a total of 134 times in the easy words with eight negative counts. In the hard word divisions, it was used 168 times with 11 negative counts. By the criteria of ten acceptable percentage points, consistency

was maintained between both the phonetic and graphic divisions and the easy and hard words. Note Table 10 for the listing of all data concerning this rule.

TABLE 10

UTILITY OF SYLLABICATION GENERALIZATION 1i IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 1i	94%	94%	94%	94%
incidences	126(y) 8(n)	126(y) 8(n)	157(y) 11(n)	157(y) 11(n)

Generalization 2a

Prefixes form separate syllables. For example: go-ing.

This generalization was regular, meeting both the 75% utility level and the 20 word application limit. There was a marked difference in the amount of times this rule was used for the easy words and hard words. In the easy words, this rule was used 106 times with only one negative count in the phonetic division. In the hard words, this rule was used 36 times without any negative counts. However, this rule came within ten percentage points both graphically and phonetically. Whenever using this rule, the significant point

remembered was the fact that prefixes, due to their morphemic nature, were meaning bearing units. Consequently, meaning took precedence over the graphic representation of what looked like a prefix. For example, the word "con-stric-tion" was counted as having a 2a(y) for the break between the first and second syllable. Meaning was changed due to the presence of "con." However, in the word "con-done," meaning was not changed by the presence of "con." Therefore, a 4a count was given. It seemed that in determining division for harder words, a wider range of elements that looked like prefixes occurred. These, however, really fell under a 3a or 4a category. Note Table 11 for a listing of all data concerning generalization 2a.

TABLE 11

UTILITY OF SYLLABICATION GENERALIZATION 2a IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 2a	100%	99%	100%	100%
incidences	106(y)	105(y) 1(n)	36(y)	36(y)

Generalization 2b

Suffixes form separate syllables. For example: na-tion-al.

There were major differences seen in the use of this rule. First of all the 75% criteria was met only for the graphic division in both easy and hard words. The 20 word application limit, however, was met for both easy and hard words in both the phonetic and graphic divisions. In dividing the easy words, rule 2b was used 218 times. However, the graphic division had only 16 negative counts while the phonetic division had 79. In dividing the hard words, rule 2b was used 326 times. The graphic divisions had 77 negative counts, while the phonetic division had 159. The utility level for generalization 2b dropped in the graphic division between the easy and hard words. Also, the results showed there was a difference in division between the phonetic and the gr hic representation of a word Thus the acceptable ten ercentage points were not met. The reason for this rested simply in the fact that when rule 2b was used as a syllabication determinant phonetically, the change in the syllabic break was altered because the suffix tended to pick up the preceding consonant. For example, words like "bit-ing" and "blind-er" divided easily according to the graphic representation. However, phonetically these words became "bi'ting" and "blin'der."

Even graphically, some suffixes tended to pick up the preceding consonant. For example: "an-ar-chi-cal" had the suffix "al" which picked up the preceding consonant "c" both graphically and phonetically. This situation was a suffix division problem more often in hard words than easy words. Thus, the percentage of utility fell markedly between these two categories. See Table 12 for a compilation of all data regarding generalization 2b.

TABLE 12

UTILITY OF SYLLABICATION GENERALIATION 2b IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule b	93%	64%	76%	51%
incidences	202(y) 16(n)	139(y) 79(n)	249(y) 77(n)	167(y) 159(n)

Generalization 2c

Suffixes form separate syllables and when they follow double consonants the suffixes pick up one of the consonants. For example: get-ting.

This rule fell below the justifiable criteria. In the division of the easy words, rule 2c was used 30 times. However, in the graphic division eight of the 30 times involved negative counts. For the phonetic

divisions, all 30 times were negative counts. In the syllabication of the hard words, rule 2c was used only 14 times. Of these 14 instances, 13 were negative counts for both the graphic and the phonetic divisions. The acceptable ten percentage points assessing consistency between the graphic and phonetic division was not met. The commonest exception to this rule were situations in the phonetic division where a doubled consonant was always dropped. This always necessitated a negative count phonetically for rule 2c. For example: "be-gin-ning" became "bi-gin-ing" or can'ning" became "kan'ing." In some instances, double consonants were not split by the suffix in either the phonetic or graphic divisions. For example: "hell-er." All data regarding generalization 2c can be seen in Table 13.

TABLE 13

UTILITY OF SYLLABICATION GENERALIZATION 2c IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 2c	73%	0%	7%	7%
incidences	22(y) 8(n)	0(y) 30(n)	1(y) 13(n)	1(y) 13(n)

Generalization 2d

The suffix "ed" when followed by "d" or "t" forms a separate syllable. For example: plant-ed.

Generalization 2e

The suffix "ed" does not form a syllable when followed by letters other than "d or t." For example: let-tered.

Generalization 2d was the commonest syllabication rule accounting for the "ed" suffix. Rule 2e was written to account for every situation that did not fall under 2d. For the easy words both 2d and 2e made the 75% criteria. However, 2d was used only 14 times, and 2e was used only 12 times. There did not seem to be as high a need for these generalizations when dealing with easy words. However, in dealing with the hard words, rules 2d and 2e when used for the graphic and phonetic division, met the 20 application limit. Within graphic and phonetic divisions the ten percent consistency level was met. Rule 2d was used 38 times without any negative counts. Rule 2e was used 65 times with only one negative count. See Table 14 for all data on generalizations 2d and 2e.

TABLE 14

UTILITY OF SYLLABICATION GENERALIZATIONS 2d AND 2e IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 2d	100%	100%	100%	100%
incidences	14(y)	14(y)	38(y)	38(y)
Rule 2e	75%	75%	99%	99%
incidences	9(y) 3(n)	9(y) 3(n)	65(y) 1(n)	65(y) 1(n)

Generalization 2f

The suffix "s" does not form a syllable. For example: at-oms.

Generalization 2g

The suffix "s" does form a syllable, however, when it is preceded by the letter "e." For example: cour-ses.

In the easy word selection, generalizations 2f and 2g were invalidated by the elimination of many words that contained suffix "s" in the Carroll list. Consequently, 2g did not meet the 75% utility or the 20 word application limit. Rule 2f met the 75% criteria but was

used only eight times. However, for the hard words, both the standards were met. Rule 2f was used 44 times without any negative counts, and 2g was used 36 times with only six negative counts. While not used that frequently, generalizations 2f and 2g, in syllabicating hard words, were consistant. Thus the ten percentage points denoting acceptability between graphic and phonetic was met. See Table 15 for the data on these two rules.

TABLE 15

UTILITY OF SYLLABICATION GENERALIZATIONS 2f AND 2g IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 2f	100%	100%	100%	100%
incidences	8(y)	8(y)	44(y)	44(y)
Rule 2g	33%	33%	83%	83%
incidences	1(y) 2(n)	1(y) 2(n)	30(y) 6(n)	30(y) 6(n)

Generalization 2h

The suffix "y" tends to pick up the preceding consonant or blend. For example: fligh-ty.

Both the 75% utility level and the 20 application limit were met in the easy and hard word

divisions. In the easy words, rule 2h was used 56 times with ten negative counts for the graphic division and five negative counts for the phonetic divisions. In the hard words, rule 2h was used 56 times with three negative counts for the graphic divisions and one negative count for the phonetic division. Some interesting exceptions involved situations where the graphic division did not pick up the preceding consonant or blend. However, phonetically just the opposite occurred. For example: "paunch-y" became "pon-che" and "pearl-y" became "per-le." See Table 16 for a listing of all data on generalization 2h.

TABLE 16

UTILITY OF SYLLABICATION GENERALIZATION 2h IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 2h	82%	91%	95%	98%
incidences	46(y) 10(n)	51(y) 5(n)	53(y) 3(n)	55(y) 1(n)

Generalization 2i

Compound words form separate syllables. For example: air-ship.

This rule met all of the criteria. It was used 172 times in the easy word division with only four

negative counts in the phonetic divisions, and no negative counts in the graphic. In the hard words, rule 2i was used 46 times with only one negative count in both the graphic and phonetic divisions. Consistency was maintained between graphic and phonetic division in both easy and hard words. Being a generalization involving structure, it was a very straightforward rule. An interesting exception to this rule involving a negative count for the phonetic division, was "breath-a-bil-i-ty" which became "bre-tHə-bil-ə-te." Note Table 17 for all data concerning generalization 2i.

TABLE 17

UTILITY OF SYLLABICATION GENERALIZATION 2i IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 2i	100%	98%	98%	98%
incidences	172(y)	168(y) 4(n)	45(y) 1(n)	45(y) 1(n)

Generalization 3a

A consonant between two vowels tends to go with the following vowel. For example: bro-ken.

Generalization 3b

A single consonant between two vowels will go with the preceding vowel if it is accented and short. For example: wag-on.

For the first time in any study, generalization 3a came up with a high utility level. It met both the 75% utility and the 20 application limit. Rule 3a proved to be so useful because the major burden of numerous exceptions was taken off of it by the writing of generalization 3b. Rule 3b involved a stipulation for accent. However, the danger with 3b as a syllabication rule was the fact that it presupposed an already existent knowledge of the word being decoded. Anyway, 3a was used more than any other rule. In the easy words, it was used 384 times with 11 negative counts for the graphic divisions and 13 for the phonetic. In the hard words, 3a was used 237 times with 12 negative counts for the graphic divisions and seven negative counts for the phonetic divisions. Consistency was maintained between graphic and phonetic divisions.

While rule 3b met the 75% utility level with the 20 application limit, the individual percentages went down in comparison to rule 3a. In the easy words, rule 3b was used 188 times with 34 negative counts for the graphic divisions and 30 negative counts for the phonetic divisions. In the hard words, rule 3b was used

196 times with 42 negative counts for the graphic divisions, and 39 for the phonetic. Note Table 18 for all of the data on generalizations 3a and 3b.

TABLE 18

UTILITY OF SYLLABICATION GENERALIZATIONS 3a AND 3b IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 3a	97%	97%	95%	97%
incidences	373(y) 11(n)	371(y) 13(n)	215(y) 12(n)	220(y) 7(n)
Rule 3b	82%	84%	79%	80%
incidences	154(y) 34(n)	158(y) 30(n)	154(y) 42(n)	157(y) 39(n)

Generalization 4a

If there are two consonants between two vowels then they are divided. For example: pic-ture.

As with generalization 3a, this rule's percentage went higher than any other study because a part of the burden was taken off of it due to the writing of generalization 4b. The 75% utility level together with the 20 word application limit were met for both easy and hard words in the graphic divisions only. The big disparity in this rule was between the graphic and

phonetic divisions. Thus the ten percentage points assessing consistency between graphic and phonetic divisions was not met. Rule 4a did not hold up when pronunciation was the sole determinant. The major reason this was true rested in the situation of double, like consonants. Graphically, they were seen but phonetically they were not heard. For example: "af-fo-rest" became "ə-for-ist," "al-lo-cate" became "al-ə-kat," and "al-low" became "ə-lou." In the phonetic syllabication this rule could not be applied because there was no double consonant. Consequently, in the easy words, out of the 269 times 4a was used, it was given 112 negative counts in the phonetic division. In the hard words, it was used 303 times with 123 negative counts for the phonetic division. See Table 19 for all data on this rule.

TABLE 19

UTILITY OF SYLLABICATION GENERALIATION 4a IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 4a	99%	58%	95%	59%
incidences	267(y) 2(n)	157(y) 112(n)	288(y) 15(n)	180(y) 123(n)

Generalization 4b

Consonant clusters such as beginning blends and consonant digraphs are not divided and go with the following vowel. The beginning blend "st" is sometimes an exception to this rule. For example: mi-grate.

Only the graphic and phonetic division in the easy words met the 75% criteria with the 20 application limit. The easy words were also consistent in both graphic and phonetic divisions. Of the 44 times it was used in dividing easy words, there were 11 negative counts for the graphic divisions and eight for the phonetic. The rule did not hold up for the hard word division. Out of the 52 times it was used, there were 17 negative counts for the graphic divisions and 15 negative counts for the phonetic. The unique problem in syllabicating harder words with this generalization rested in the changes that beginning blends in the "s" family presented. The beginning blend "st" had a tendency to be divided in the graphic and phonetic division. For example: "band-mas-ter" became "band-mas-tər" and "blus-ter" became "blus-tər." Other "s" blends had similar divisions: "mus-ca-tel," "es-cape," and "es-pe-cial-ly." In words like "es-cape" or "es-pe-cial-ly," the phonetic unity of the blend was retained and they looked like this: "e-skap" and "e-spesh-ə-le." To recapitulate, it was the "s" family

blends that presented the major problem to generalization 4b. It was without a doubt that this rule would stand if all "s" family blends were held in reservation. See Table 20 for all data on generalization 4b.

TABLE 20

UTILITY OF SYLLABICATION GENERALIZATION 4b IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 4b	75%	82%	67%	71%
incidences	33(y) 11(n)	36(y) 8(n)	35(y) 17(n)	37(y) 15(n)

Generalization 4c

When three consonants come between two vowels, division occurs either before or after the blend or digraph in the three consonant combination. For example: an-gler.

This generalization met the 75% criteria with the 20 word application limit. For the easy words, it was used 44 times with one negative count for the phonetic division and two negative counts for the graphic division. Thus, it met the ten percent limit in assessing consistency between easy and hard word lists. The generalization accurately described 52 hard words without

any negative counts. There were, however, exceptions where another rule became applicable. For example, three letter consonant blends were never divided: "at-mo-sphere" became "at-mə-sfir" and "mis-an-thro-pist" became "mis-an-thrə-pist." Also, there were three consonant combinations whose cluster involved "y." In this case, "y" functioned as a vowel. For example: "ox-y-gen" became "ox-sə-jən." All data concerning generalization 4c can be seen in Table 21.

TABLE 21

UTILITY OF SYLLABICATION GENERALIZATION 4c IN BOTH EASY AND HARD WORDS

	EWGD	EWPD	HWGD	HWPD
Rule 4c	96%	98%	100%	100%
incidences	42(y) 2(n)	43(y) 1(n)	52(y)	52(y)

Situation X

Every time a letter was dropped in the phonetic division of a word, a special tally (x) was kept. A tally of this sort usually involved the phonetic divisions of words. For example, the word "ac-count" became phonetically "ə'kaunt." This word was classified as having a negative count phonetically under rule 4a,

and was given a tally of a dropped consonant. The generalizations that received this tally were 1a, 2b, 2c, and 4a. In the easy word list there were 161 dropped letters. In the hard words there were 117.

Summary of Results

In section one of the Fry list of syllabication generalizations, all rules that dealt with syllables having vowel sounds, were found acceptable with the exception of generalization 1b. Rule 1b involved the situation of syllabic "l, m, and n."

In section two, concerning structural elements in words, all generalizations met the acceptable criteria with the exception of 2c (HWGD and HWPD), 2d (EWGD and EWPD), 2e (EWGD and EWPD), 2f (EWGD and EWPD), and 2g (EWGD and EWPD). All generalizations met the 75% utility level except 2b (EWPD and HWPD), 2c (EWPD, HWGD and HWPD), and 2d (EWGD and EWPD).

In sections three and four concerning the pattern VCV, VCCV, and FCCCV, all generalizations met the 20 applications limit. All generalizations met the 75% utility level with the exception of 4a (EWPD and HWPD) and 4b (HWGD and HWPD). Note Table 22 for a listing of all data.

TABLE 22

A LISTING OF THOSE GENERALIZATIONS THAT FAILED THE CLYMER CRITERIA SHOWING DISPARITY BETWEEN GRAPHIC AND PHONETIC AND EASY AND HARD WORD DIVISIONS

Rule	EWGD	EWPD	HWGD	HWPD
1b	0%	0%	0%	0%
2b	93% 202(y) 16(n)	64% 139(y) 79(n)	76% 249(y) 77(n)	51% 167(y) 159(n)
2c	73% 22(y) 8(n)	0% 0(y) 30(n)	7% 1(y) 13(n)	7% 1(y) 13(n)
2d	100% 14(y)	100% 14(y)	100% 38(y)	100% 38(y)
2e	75% 9(y) 3(n)	75% 9(y) 3(n)	99% 65(y) 1(n)	99% 65(y) 1(n)
2f	100% 8(y)	100% 8(y)	100% 44(y)	100% 44(y)
2g	33% 1(y) 2(n)	33% 1(y) 2(n)	83% 30(y) 6(n)	83% 30(y) 6(n)
4a	99% 267(y) 2(n)	58% 157(y) 112(n)	95% 288(y) 15(n)	59% 180(y) 123(n)
4b	75% 33(y) 11(n)	82% 36(y) 8(n)	67% 35(y) 17(n)	71% 37(y) 15(n)

The Generalizations that Showed Disparity Between the Phonetic and Graphic Divisions and Easy and Hard Word Lists

All generalizations showed consistency between the easy and hard word lists and between the graphic and phonetic divisions except 1b, 2b, 2c, 2d, 2e, 2f, 2g, 4a, and 4b. The problems with each one of these will be briefly recapitulated. Consult Table 22 for all data.

Generalization 1b

As was discussed previously, generalization 1b proved to be strictly a phonetic phenomenon where other rules took precedence. Thus, in a division problem like "cho-sen" or "cho-zn," generalization 2b took priority over 1b.

Generalization 2b

The discrepancy in this rule was the difference between the phonetic division and graphic division in both easy and hard words. The phonetic division did not hold because suffixes tended to pick up the preceding consonant and lose their syllabic identity. For example: "bit-ing" became "bi-ting."

Generalization 2c

This rule just barely made the 20 application limit in the EWGD. However, in all other areas it

fell way below acceptability. While graphically operable on easier words, this rule became useless in all other situations. It was never used that often in dividing hard words both graphically and phonetically.

Generalizations 2d and 2e

A combination of these rules was more operable with hard words than with easy words. No major disparity occurred between the percentages obtained in the graphic and phonetic divisions.

Generalizations 2f and 2g

Due to the filtering out process of plural words in the Carroll list, this should not be considered the final decision on the utility level of 2f and 2g when syllabicating easy words. In dealing with hard words, 2f and 2g were used more often and showed consistency between the phonetic and graphic divisions.

Generalization 4a

This generalization described graphic divisions for hard and easy words, but not the phonetic division. For both word lists, the generalization did not apply to twin consonant divisions.

Generalization 4b

This rule's percentage of utility fell to an unacceptable level when applied to hard words, and a

difference in percentage points occurred between the easy and hard words. The rule, particularly with hard words, encountered major difficulties with the "s" family consonant blends. Since the "s" family blends were divided more often graphically than phonetically, the phonetic divisions achieved higher percentages than the graphic divisions in both easy and hard words.

Comparison of Results with Other Studies

Generalization Concerning Vowel Elements 1a Through 1i

Burmeister (1966) found that every single vowel meant a syllable with the exception of final "le," and that final "e" was always silent. These rules received utilities of over 90%. Her rules were comparable to generalizations 1a and 1i of this study. In the present study, rules 1a and 1i received percentages from 92 to 97. Generalization 1a was also similar to #40 which was investigated by Emans (1967), Bailey (1967), Clymer (1963), Parker (1968), Burmeister (1966), and McFeely (1972). The results in these studies were about 90% or higher. Nevertheless, Emans and McFeely's results do not agree with those found in the present investigation. Emans obtained a 78% for this rule and McFeely obtained a 59% for the Scott-Foresman series and a 60% for the Macmillan Series. McFeely's results were

surprising when note was taken of the fact that his words were syllabicated only by the phonetic division. Differences between his results and the present study may be due to the different dictionaries used. Also, in the McFeely study there may have been a higher occurrence of twin consonants preceding the "le" pattern. If this was so, then phonetically there would not be division in the middle of the consonants. One of the consonants would be silent and unattached to the "le" pattern.

As with this study, Burmeister also took a count of various vowel combinations to see if they always formed a syllabic unit. Her percentages were on a range from 75% to 90%. She also studied the various vowel combinations that formed two syllables. They were "ia, ie, ea, eous, and ious." She also had a category classified as "miscellaneous." However, these categories do not directly compare with any rules used in this study. Burmeister's unspecified vowel combinations could be listed under generalizations 1d through 1h which all received percentages of utility of 90% and higher. Burmeister's breaking down of various vowel elements having separate sounds and forming separate syllables, could be combined under generalization 1c. Generalization 1c had 100% utility in both graphic and phonetic division and easy and

hard word lists. Note Table 23 for comparisons.

Generalizations Concerning Structural Elements 2a Through 2i

Only the Burmeister (1966) and McFeely (1972) studies were relevant to results found in this study. Neither Burmeister nor McFeely wrote separate generalizations for specified suffixes. Utility levels of suffixes "ed," "s," and "y" were unique to this study only. The generalizations that were considered by Burmeister and McFeely were those involving divisions between prefixes and roots, suffixes and words, and compound words. Generalizations 2a, 2b and 2i were the only rules that could be compared to Burmeister and McFeely. Generalizations 2a and 2i were close to the results obtained by Burmeister and McFeely. In all studies, the range of percentage points for these two rules was from 94 to 100. However, in generalization 2b there was a slight discrepancy between percentage points. For the suffix rule, Burmeister obtained 74%, and McFeely obtained 81% for both the Macmillan Series and Scott Foresman readers. In this study, the easy word list under the graphic division had a higher utility of 93%. However, the 76% result for the graphic division of hard words was closer to the data obtained by Burmeister. McFeely used only the phonetic

division, but his 81% did not compare at all with the 64% in the present study's EWPD and the 51% in the HWPD. The only explanation for this was that McFeely's suffix generalization was inclusive of suffixes "y," "s" and the exception for "ed." Because of this, he probably attained a higher utility level. Note Table 23 for comparisons.

Generalizations Concerning the Pattern VCV 3a and 3b

Generalizations written to accommodate the pattern VCV have in the past had very low percentages of utility: Clymer 44%, Emans 47%, Bailey 50%, and Parker 53%. Even when exceptions were made for certain specified situations as "r," "ph," "ch," and "sh," both the Burmeister and McFeely studies did not achieve anything higher than 69%. The writing of generalization 3b enabled the utility level of generalization 3a to go higher. See Table 23 for comparisons

Generalizations Concerning the Pattern VCCV and VCCCV 4a Through 4c

Rule 4a was comparable to rule #38 used in the Clymer, Bailey, Emans, and Parker studies. In these studies the range of percentage points went from 72 to 85. The results obtained in this study were much

TABLE 23

UTILITY OF SYLLABICATION RULES TAKEN FROM THE CLYMER, BAILEY, EMANS, PARKER, McFEELY, AND COSTIGAN STUDIES

	[a]Macmillan Series	[b]Scott Foresman

I. Every Syllable Must Have a Vowel Sound

A. Every single vowel means a syllable (excluding "final e," except "final consonant le").
Burmeister
99.7%

B. A "final e" is silent, unless it is "final consonant le."
Burmeister
97.5%

C. If the last syllable of a word ends in "le," the consonant preceding the "le" usually begins the last syllable. (Originally #40 in Clymer, Bailey, Emans, and Parker studies.)

Clymer	Emans	Bailey	Parker
97%	78%	93%	98%

Burmeister	McFeely[a]	McFeely[b]
93%	60%	59%

D. Final "le" picks up the preceding consonant to form a syllable. (la on Fry list.)
Costigan
97%(EWGD) 94%(EWPD) 97%(HWGD) 92%(HWPD)

E. Every vowel combination means a syllable (computed on 10% stratified sample plus random sampling of vowel combinations).
Burmeister
84.5%

F. Every vowel combiantion means a syllable (computed on stratifications: AA to 6).
Burmeister
90.6%

TABLE 23 (Continued)

[a]Macmillan Series [b]Scott Foresman

G. Every vowel combination means a syllable (computed on stratifications: 1-5).
Burmeister
75.8%

H. A vowel combination means no syllable (-que).
Burmeister
0.7%

I. A vowel combination means two syllables.
Burmeister
14.8% (composite)

1. "ia" means two syllables.
Burmeister
5.2%

2. "ie" means two syllables.
Burmeister
1.1%

3. "ea" means two syllables.
Burmeister
1.5%

4. "eous, ious" means two syllables.
Burmeister
1.9%

5. Miscellaneous.
Burmeister
5.0%

J. At the end of a word, "l, m, and n" will form a separate syllable. (1b on Fry list).
Costigan
0%

K. Two vowels together with separate sounds form separate syllables. (1c on Fry list).
Costigan
100%(EWGD) 100%(EWPD) 100%(HWGD) 100%(HWPD)

TABLE 23 (Continued)

	[a]Macmillan Series	[b]Scott Foresman

L. Dipthongs like "oi, oy, ou, and ow" are not separated. (1d on Fry list).
Costigan
98%(EWGD) 98%(EWPD) 100%(HWGD) 100%(HWPD)

M. Digraphs like "ea, ee, ai, ay, oo, oa, and ow" are not separated. (1i on Fry list).
Costigan
95%(EWGD) 95%(EWPD) 94%(HWGD) 94%(HWPD)

N. Broad "o" sounds like "au, aw, and al" are not separated. (1f on Fry list).
Costigan
95%(EWGD) 95%(EWPD) 95%(HWGD) 95%(HWPD)

O. R-controlled vowel sounds like "ar, er, ir, or, and ur" are not separated. (1g on Fry list).
Costigan
92%(EWGD) 93%(EWPD) 92%(HWGD) 93%(HWPD)

P. The letter "y" at the end of or in the middle of a word always makes a vowel sound and hence a syllable. (1h on Fry list).
Costigan
100%(EWGD) 100%(EWPD) 100%(HWGD) 100%(HWPD)

Q. The letter "e" at the end of a word is always silent. More specifically, the "e" is silent when it follows consonants preceded by a vowel. This rule applies to: (1) monosyllabic words like "come" and "some," (2) compounds words like "home-maker," and (3) in divisions formed by syllabication like "hate-ful." (1i on Fry list).
Costigan
94%(EWGD) 94%(EWPD) 94%(HWGD) 94%(HWPD)

II. Structural Elements in a Word

A. Divide between a prefix and a root.

Burmeister	McFeely[a]	McFeely[b]
95%	98%	97%

TABLE 23 (Continued)

	[a]Macmillan Series	[b]Scott Foresman

B. Divide between two roots.

Burmeister	McFeely[a]	McFeely[b]
95%	95%	97%

C. Divide between a root and a suffix.

Burmeister	McFeely[a]	McFeely[b]
74%	81%	81%

D. Prefixes form separate syllables. (2a on Fry list)

Costigan

100%(EWGD) 99%(EWPD) 100%(HWGD) 100% (HWPD)

E. Suffixes form separate syllables. (2b on Fry list).

Costigan

93%(EWGD) 64%(EWPD) 76%(HWGD) 51%(HWPD)

F. Suffixes form separate syllables and when they follow double consonants the suffixes pick up one of the consonants. (2c on Fry list).

Costigan

73%(EWGD) 0%(EWPD) 7%(HWGD) 7%(HWPD)

G. The suffix "ed" when followed by "d or t" forms a separate syllable. (2d on Fry list)

Costigan

*100%(EWGD) *100%(EWPD) 100%(HWGD) 100% (HWPD)

H. The suffix "ed" does not form a syllable when followed by letters other than "d or t." (2e on Fry list).

Costigan

*75%(EWGD) *75%(EWPD) 99%(HWGD) 99%(HWPD)

I. The suffix "s" does not form a syllable. (2f on Fry list).

Costigan

*100%(EWGD) *100%(EWPD) 100%(HWGD) 100% (HWPD)

TABLE 23 (Continued)

	[a]Macmillan Series	[b]Scott Foresman

J. The suffix "s" does form a syllable, however, when it is preceded by the letter "e." (2g on Fry list)

Costigan			
*33%(EWGD)	*33%(EWPD)	83%(HWGD)	83%(HWPD)

K. The suffix "y" tends to pick up the preceding consonant or blend. (2h on Fry list).

Costigan			
82%(EWGD)	91%(EWPD)	95%(HWGD)	98%(HWPD)

L. Compound words form separate syllables. (2i on Fry list).

Costigan			
100%(EWGD)	98%(EWPD)	98%(HWGD)	98%(HWPD)

III. The Situation of the Pattern VCV

A. If the first vowel sound in a word is followed by a single consonant that consonant usually begins the second syllable. (Originally #39 in Clymer, Bailey, Emans, and Parker studies.)

Clymer	Emans	Bailey	Parker
44%	47%	50%	53%

B. When two vowel sounds are separated by one consonant, divide before the consonant but consider "ph, sh, and ch" to be single consonants.

Burmeister
69%

C. A single consonant between two vowels usually goes with the second vowel to form a syllable except when that consonant is "r."

McFeely[a]	McFeely[b]
54%	52%

TABLE 23 (Continued)

	[a]Macmillan Series	[b]Scott Foresman

D. When "r" follows a vowel, the "r" usually belongs in the syllable with the vowel it follows.

Burmeister	McFeely[a]	McFeely[b]
46%	50%	50%

E. In a word of more than one syllable, the letter "v" usually goes with the preceding vowel to form a syllable. (Originally #42 in the Clymer, Bailey, Emans, and Parker studies.)

Clymer	Bailey	Emans	Parker
73%	65%	40%	30%

Burmeister
41.7%

F. Combine rules B, D, and E.
Burmeister
80%

G. A consonant between two vowels tends to go with the following vowel. (3a on Fry list).
Costigan
97%(EWGD) 97%(EWPD) 95%(HWGD) 97%(HWPD)

H. A single consonant between two vowels will go with the preceding vowel if it is accented and short. (3b on Fry list).
Costigan
82%(EWGD) 84%(EWPD) 79%(HWGD) 80%(HWPD)

IV. The Situation of the Pattern VCCV and VCCCV

A. Situation blend: When a word contains a blend, the blend usually begins the syllable.

McFeely[a]	McFeely[b]
100%	100%

TABLE 23 (Continued)

	[a]Macmillan Series	[b]Scott Foresman

B. When you have a cluster of two different consonant letters, usually you divide the word into syllables between the two letters of the cluster except when that cluster forms a digraph or blend.

McFeely[a]	McFeely[b]
85%	84%

C. When a vowel element is followed by a cluster of two like consonants "tt" or the clusters "th, ck, ch, and sh," these clusters are not divided and the cluster usually ends the syllable.

McFeely[a]	McFeely[b]
74%	71%

D. 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. (Originally #38 in the Clymer, Bailey, Emans, and Parker studies.)

Clymer	Emans	Bailey	Parker
72%	80%	78%	85%

E. When the first vowel element in a word is followed by the letters "th, ch or sh," these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable. (Originally #41 in the Clymer, Bailey, Emans, and Parker studies.)

Clymer	Emans	Bailey	Parker
100%	100%	100%	100%

F. When two vowel sounds are separated by two consonants, divide between the consonants but consider "ph, ch, and th" to be single consonants.

Burmeister
94%

TABLE 23 (Continued)

	[a]Macmillan Series	[b]Scott Foresman
G.	If there are two consonants between two vowels then they are divided. (4a on Fry list). Costigan 99%(EWGD) 58%(EWPD) 95%(HWGD) 59%(HWPD)	
H.	Consonants clusters such as beginning blend and consonant digraphs are not divided and go with the following vowel. (4b on Fry list). Costigan 75%(EWGD) 82%(EWPD) 67%(HWGD) 71%(HWPD)	
I.	When three cynsonants come between two vowels, division occurs either before or after the blend or digraph in the three consonant combination. (4c on Fry list). Costigan 96%(EWGD) 98%(EWPD) 100%(HWGD) 100% (HWPD)	

*Twenty application limit not met.

higher due to the existence of generalization 4b.

Comparable to 4b in the Clymer, Bailey, Emans and Parker studies was their rule #41. This rule achieved a 100% utility in all studies. However, only certain consonant digraphs were specified for no division. These digraphs were "th," "ch," and "sh." Burmeister also used a rule that was similar to the Clymer (1963), Emans (1967), Bailey (1967), and Parker (1968) rule. In it, however, she specified "ph," "ch," and "th" as the unbreakable consonant clusters. In the Clymer (1963), Bailey (1967), Emans (1967), and Parker (1968) studies, rule #41 was so specific that it did not take much of the burden from rule #38. In the present study, much of the burden for exceptions was taken from generalization 4a by the writing of 4b. However, 4b proved unacceptable because of division problems that arose both phonetically and graphically in the syllabication of hard words. As was described in a previous section, the hard words had many divisional differences both phonetically and graphically becuase of the "s" family blends.

To deal with the problem of phonetic division, McFeely (1972) based his rules entirely on phonetic breaks. Thus McFeely made allowances for twin consonants. Twin consonant breaks were what lowered the utility level of rule 4a in the phonetic divisions

in this study.

In no instance did anyone write a generalization that involved the VCCCV pattern. Rule 4c was unique to this syllabication utility analysis. Note Table 23 for all data.

CHAPTER V

SUMMARY

In this study Fry's 23 syllabication generalizations were applied to two sets of 1,000 words. The first set which was classified as easy words came from the Word Frequency Book by Carroll, Davis, and Richman (1971). The second set, classified as hard words, was randomly selected from the Thorndike Barnhard Advanced Dictionary (1974). The graphic and the phonetic divisions were used as determinants of syllabic breaks for individual words. Acceptable percentages were based on the criteria originally set by Clymer in 1963. This criteria claimed that 75% was the minimal percentage level to determine usability of a rule together with a 20 application limit. From the data based on this criteria, comparisons were made between the syllabications of easy and hard works, graphic and phonetic divisions, and the results obtained by other studies.

Summary of Findings

All generalizations with the exceptions of 1b, 2b EWPD and HWPD, 2c, 2d EWGD and EWPD, 2e EWGD and

EWPD, 2f EWGD and EWPD, 2g EWGD and EWPD, 4a HWGD and HWPD, and 4b HWGD and HWPD met the Clymer criteria. The major differences in the syllabication of easy and hard words were seen in generalizations 2b, 2d, 2e, 2f, 2g, and 4b. Concerning 2b, the percentage dropped in the graphic division between easy and hard words from 93% to 76%. Concerning 4b, the percentage dropped in the graphic division between easy and hard words from 75% to an unacceptable 67%. The infrequent use of 2d, 2e, 2f, and 2g in the easy word category made comparison impossible with the hard word list. However, generalizations 2d, 2e, 2f, and 2g did have high utility levels in the syllabication of the hard words. The percentage points ranged from 83 to 100.

The major difference between the graphic and phonetic division was seen in generalizations 1b, 2b, 4a, and 4b. Each of these rules either fell below the acceptable percentage in the easy word or hard word category in the phonetic division. Concerning 1b, it was discussed that other generalizations would take priority in syllabication. With 2b, the phonetic problem rested largely in the fact that suffixes tended to pick up the preceding consonant and thus lose their distinct syllabic identity. Just the opposite was true with 4a where phonetically a syllabic unit did not pick up but dropped one of the twin

consonants. Concerning 4b, irregularities in this study were caused mostly in the hard list of words where an excessive amount of "s" family blends had a tendency to be graphically and phonetically separated. This, of course, ran contrary to the rule and caused the lowered utility level.

The major differences in this study to the results of others rested in: (1) high utility levels achieved by those generalizations concerning vowel sounds, (2) the confirmation of several rules' usability through a comparison of the phonetic division with the graphic division, (3) the high utility level achieved by generalization 3a through the writing of generalization 3b, and (4) the proof attained through a comparison of the phonetic and graphic divisions that there was some disparity in certain rules.

Recommendations Regarding the Fry Syllabication Generalizations

Based on the findings of this study it is suggested that generalizations 1b and 2c be made subsidiary to other generalizations. While useable in either hard word lists or in graphical syllabication, generalizations 2b, 2d, 2e, 2f, 2g, 4a, and 4b should be used with the insights that have been found operable in this study. The other

generalizations, 14 in all, are recommended as pedagogically useful based on their high utility within graphic and phonetic division and easy and hard word syllabications. However, some qualifications are warranted in the understanding of the act of syllabication and how the Fry rules specify the unique integration of phonic knowledge and structural analysis skills.

1. A knowledge of phonics is imperative in the use of syllabication. The verification of the Fry rules have underscored the importance of knowing short and long vowel sounds, consonant blends, dipthongs, vowel digraphs, broad "o" sounds, "r-controlled" vowels, and silent "e" at the end of a word. If a reader can not distinguish the difference between a dipthong and a vowel digraph, then it is useless to suppose that syllabication will help him decode multisyllabic words. Syllabication presupposes a knowledge of phonics. If a reader knows vowel sounds, then the assumption is that syllabication rules will help him break words up into manageable parts. However, the Fry rules could be used to either review phonic knowledge, or to integrate it into decoding of multisyllabic words. This is so since rules 1a through 1i (except 1b) reiterate some of the most important phonic rules that are needed to decode

both monosyllabic and multisyllabic words.

A knowledge of consonant blends, digraphs and consonant three-letter blends is also expected in the application of rules 4a, 4b, and 4c. If rule 4b is to be taught special allowances must be made for consonant blends in the "s" family.

2. The oddities that occur between the graphic and phonetic divisions should be taught. From the findings of this study there are two major areas that present problems. First of all syllabication rules overlap in their application. As was pointed out with rule 1b syllabic "l, m, and n" are taken care of in other rules. For example, "l" is syllabic in the word "bot-tle" which yields "bot'l." However, rule 1a accounts for the division. In the word "cho-sen," "n" is syllabic. However, rule 2b concerning suffix division takes priority. The word "bot-tom" becomes "bot'əm." However, in this case, rule 4a takes priority. The schwa sound is also highly important in understanding divisional differences that occur between rule 1b and rules 1a, 2b, and 4a. The schwa sound sometimes preceeds the syllabic situation of "l, m, and n." For example: "driv-en" becomes "driv-ən," "bot-tom" becomes "bot-əm," and "sin-gle" becomes "sing-gəl." Thus, in applying rules 1a, 2b, and 42, the situation of syllabic "l, m, and n" should

be taught. The schwa sound should also be taught.

Second, in teaching rules 1a, 2b, 2c, and 4a it should be pointed out to the student that one of the two twin consonants will probably be silent. For example, "bot-tle" becomes "bot'l," "tell-ing" becomes "tel-ing," "be-gin-ning" becomes "bi-gin-ing" and "al-low" becomes "ə-lou." Recently, it has been fashionable to recommend that students be taught to make syllabic divisions after twin consonants (Johnson & Merryman, 1971; McFeely, 1972; Seymour, 1975). Since all dictionaries divide between twin consonants and since the dictionary is the only reference used in the classroom, then it seems reasonable to teach the student that division will occur graphically between twin consonants. However, instruction can bring out the point that phonetically only one consonant is heard.

3. Syllabication can function as an introduction to structural analysis. Since structural analysis skills usually involve the instruction of prefixes, suffixes and compound words, then the Fry rules could be used for the purpose of this type of instruction. In the teaching of the suffix "ed," rules 2d and 2e should be combined. In the teaching of the suffix "s," rules 2e and 2f should be combined. The finding in this study that some suffixes

phonetically tend to pick up the preceding consonant could be taught. This is a qualification for the use of 2b which is a highly used rule.

4. Syllabication instruction should be accompanied by instruction on accented and unaccented syllables. Accent generalizations are beyond the scope of this study. However, rule 3b concerning a single vowel between two consonants, involved a knowledge of accented and unaccented syllables.

5. Since divisional differences both phonetically and graphically are found in the dictionary, then students should be taught how to use the dictionary. This includes instruction on how to use both the graphic entry as well as the phonetic transcription.

In conclusion, divisional differences between the phonetic and graphic divisions were found to be minimal. Three major divisional problems were: (1) twin consonants between vowels have one of the consonants unspoken (this would affect rules 1a, 2c, and 4a), (2) suffixes in the phonetic division tend to pick up the preceding consonant (this affects rule 2b), and (3) "s" family blends are sometimes divided both phonetically and graphically (this effects rule 4b). If allowances are made for these phonetic differences via instructional methodology and based on

the insights given in this study, then all of the Fry syllabication generalizations can be taught.

Recommendations for Further Research

1. Since many arguments are proposed against syllabication for linguistic reasons, research should be conducted to see if teaching the disparity between the graphic and phonetic divisions would improve spelling and word decoding ability.

2. Since syllabication is inextricably related to phonics and a knowledge of phonics presupposes successful syllabicating, research should be conducted to devise a usable program to implement the integration of these skills to see if reading growth is achieved in spelling and word decoding.

3. A comparison should be made between several grade levels to understand syllabication's impact on word decoding and spelling, and to understand if age effects responsiveness to the use of syllabication skills.

4. Since many of the studies relating to syllabication have been done with lower grades, research should be conducted to see if awareness in syllabication would help disabled high school and/or adult readers decode words and spell more effectively.

5. Research should be designed to determine whether or not a reader, when encountering an unknown word, does indeed break words in parts as big as syllabic units.

Concluding Statement

Since a growing throng of dissidence has arisen in the 70's regarding the usefulness of syllabication, it is not expected that the results of this study will be looked upon very favorably. Through the years many reading specialists have thought of syllabication as an important skill. No research is conclusive in denouncing the use of syllabication for spelling and word decoding. However, the research on auditory and visual perception has given credence to the chunkable reality of the syllable in word perception and that the syllable is an important perceptual unit. Syllabic boundaries are heard in multisyllabic words and from the findings of this study, the incongruencies between the spoken syllable and its written counterpart are not that extensive. Instructional strategies can be used to teach the differences that do occur via the Fry rules. It is hoped that the findings of this study will help the classroom teacher improve those strategies.

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APPENDIX A

HARD WORDS TAKEN FROM THE THORNDIKE BARNHART DICTIONARY

abbatial
abloom
abridgement
absorptive
accenthus
accessional
accordionist
acerbity
acquaintance
actinic
adage
adjustment
ado
advanced
advisedly
aestheticism
afforest
afterdeck
agglomeration
agreeable
airbase
airship
alate
aleatoric
alias
allantoic
allocate
almighty
altar
altostratus
amateurism
amendment
ammoniacal
amphibian
anabolic
anarchical
andiron
angler
animalcule
announcement
antacid
anthracitic
antiknock
antler
aperient
apostle
appeasement
appraisement
apropos
arable
archaeological
areal
arisen
armor
arresting
articular
asafetida
asinine
assailant
assistance
asthma
ataractic
athwart
attachment
attract
augury
autarky
autointoxication
avenge
awardee
axone
axurite
bacchant
backrest
badger
baker
balderdash
balmy
bandmaster
banquet
barbecue
barkeep
barrette
baseboard
bassinet
batsman
bayleaf
beanbag
beaten
bedaub
beetle
behindhand
bellbird
bended
benthic
besetting
bethought
bias
bifid
billet
bioassay
birdseed
biting
blackboard
bladed
blastular
blinder
blockbuster
bloomers
bluebell
bluster

bobcat
boiler
bombard
bonnett
boondocks
boreal
botchy
bouncer
boxcar
braggadocio
brachiopod
breadbasket
breathability
bribery
brimful
broadax
broncobuster
bruin
bubbletop
budgerigar
bulbar
bullock
bundhouse
buried
bursa
bustard
buttermilk
bygone
caboose
cafeteria
calculable
callback
calypso
campaign
cancellation
canning
canvasback
capillary
captaincy
carbonic
careen
carnal
carrion
carton
cashmere
castle
catarrh
caterwaul
cauldron
cayuse

cellular
centerboard
centrosome
cereus
chairman
chambermaid
channel
characterization
charlatanry
chasten
checkbook
chemist
chewink
childbearing
chinaware
chitinous
chokebore
chortle
chromosomal
churchwarden
cion
circumlocatory
citronella
clambake
classbook
clayey
cleistogamous
climactic
cloakroom
closure
clubfooted
coarsen
cockatoo
codon
cohesive
colemanite
collectivist
colonnade
columbium
commandment
comeback
commitment
communication
comparable
competitor
complimentary
compromise
concept
concrescence
condone

confess
confound
congruent
connexion
conservatism
consonance
constriction
container
contingency
contractible
controversial
conversional
coolant
copperhead
cordite
cornel
corpsman
corrosion
cosmodrome
cottony
counterattack
coupler
covalence
cowlick
cradlesong
crater
credential
creosol
criminal
crockery
crossbuck
croupy
crumble
cryptographer
cuisine
cumulous
curiosity
curtail
customer
cutwater
cymose
cytoplasm
daimyo
dampen
daring
dated
deacon
deanery
decagram
decided

declivity
dedicative
defense
degas
delay
deliver
demise
demure
dentifrice
deponent
dereliction
desertion
desperation
detector
developer
devoted
diagrammatic
diarrheal
dictatorial
diet
digest
diluent
dioramic
directional
disappearance
disclosure
discriminate
dishabille
dismember
displease
disseminate
distaste
distribution
diversion
dizzy
dodger
doldrums
dominate
doorman
dotty
doughy
downtown
drama
dreadful
driblet
drizzly
druidic
duality
dugout
dungaree
dustman

dyewood
dystrophy
earmark
eastbound
ebullition
economist
edifice
effective
effusive
ejaculate
eldest
electroluminescence
electrophoretic
elementary
elixir
emanative
embrocate
emmet
emulous
encroach
endorsement
engender
enmasse
entete
entrust
ephemerid
epiphyte
equanimity
eradicable
errantry
escrow
essentiality
eternity
eucalyptus
euthenics
eventful
evolutional
excellence
excrement
exert
existentialist
expectation
explanation
expressible
extinct
extremism
eyelid
facet
failing
fakery
falsetto

fandango
farrier
fastback
fatuity
fearful
federalism
felicity
fenestration
fertilization
fiacre
fidelity
fiftieth
filet
finale
fingernail
firecracker
fiscal
fivefold
flagellate
flannel
flatfoot
fleshly
flippancy
flophouse
flowered
fluorocarbon
flyer
folder
folly
footballer
forbidden
forehanded
forever
formaldehyde
forthwith
foundation
fracas
frankfurter
freeboard
freezer
frequent
frighten
frolicsome
frugality
fullback
funerary
furrow
futurism
gaga
galley
gambrel

gantlet
garrison
gatepost
gayety
geminate
generative
gentlefolk
geomorphologist
gerontological
ghastly
gifted
ginseng
glaciologist
gleaning
glomerulus
glycogen
goalie
goldbrick
goodish
gorgeous
gourmet
gradient
grammatical
granivorous
grasshopper
grayish
greenback
grenadier
gripping
grotesque
grovel
guarantor
guidebook
gullet
gargle
gyroscopic
gynoecium
hacksaw
hairy
halfway
hamadryad
handbag
handwork
happening
hardhearted
harpist
hassock
Hauteur
haycock
headfirst
hearken
heated
hebdomadal
heifer
heller
hemipterous
heptagon
hereto
hesitant
hiatus
highball
hillbilly
hipster
hoarding
hogan
holiness
holystone
homogenate
honeymoon
hookah
horehound
horseback
hostage
houseboat
howbeit
hula
humidor
hurrah
hyacinthine
hydrogenous
hymenopteron
hypocritical
hyrax
iceberg
ideal
idler
illegal
illustrious
immaturity
impacted
imperial
impliedly
imprecision
impulse
inopposite
inceptive
incognito
incontrollable
incur
indescribable
indifferent
indivisibility
indulgent
inexhaustibility
inference
infliction
ingathering
inhumation
innards
inquisition
insertion
inspiration
instructive
intake
intent
interdisciplinary
interlocutory
interoffice
interval
intraspecies
inundation
inveteracy
inwards
irascibility
ironware
irreverence
isobaric
issuance
itinerate
izzard
jackstone
jangle
jawbreaker
jerkin
jiffy
jockey
jointed
journalist
judgemental
jumpmaster
jurisprudential
juvenility
kangaroo
keelson
keratinous
khaki
killdeer
kindly
kipper
kneecap
knotgrass
kolinsky
kumiss

kyphosis
laccolith
lading
lambast
landau
languid
lapwing
lashing
latent
laughable
lawbreaker
laywoman
leafage
leastways
leeward
legislate
lengthen
leper
lettered
leviathan
liberate
liegeman
lifer
lighting
liliaceous
limpid
liner
lioness
litany
littoral
lizard
loblolly
lodestar
loincloth
longshoreman
loosen
lotion
loveable
lowering
lucubration
lunate
lusty
lymphocyte
lytic
machicolated
madam
magical
magnetosphere
mailbox
majuscule
malaria
mallow
manageability
manful
manna
manual
maraud
mariner
marlin
marshals
masculinity
masterful
matchbook
matronly
mawkish
meaculpa
measureless
median
medullary
megrim
membrane
meningeal
merchant
mermaid
messmate
metaphysician
metrics
mickle
midbrain
midwife
milksop
mimeograph
mini
minstrelsy
misanthropist
misgive
missive
mitigation
mockery
modify
moldboard
monarch
monicker
monolithic
montage
moorage
mordent
mortality
motel
motorboat
mousetrap
mucilage
muleteer
multitude
muscatel
muskrat
mutual
mystical
nameable
narrate
nationhood
nausea
nearby
needful
negotiation
nephric
nethermost
nevermore
newsboy
nicety
nightlong
nippy
nocturnal
nondescript
nonvoter
northerner
nosepiece
notorious
nubility
numbing
nutrition
obeisance
obligato
observing
occasional
octave
oesophagus
officient
oilcloth
oleaginous
omissible
onomatopoeia
opener
ophthalmia
oppressive
orator
orderly
organizational
ornamental
oscillation

otherwise
ouster
outing
outsider
overachiever
overfly
oversee
oxyhemoglobin
owing
package
pageant
palanquin
palindrome
palpitant
pander
panther
papule
parallelepiped
paratrooper
parka
parsimony
partitive
passage
pastel
patella
patriarchal
paunchy
payola
pearly
pedate
pegboard
penal
penknife
penury
percept
perfervid
periodic
permit
persist
persuasible
pester
petulance
pharyngeal
philodendron
phonemic
photographic
physician
pickaback
piebald
pigment
pillared
pinchbeck
pinup
piscatorial
pitchman
placeable
planar
plasterboard
platypus
pleasantry
pliancy
plumbing
plywood
poikilotherm
pikeberry
policyholder
poltergeist
polyvalence
pontificate
popper
portal
portulaca
postage
postulate
potluck
powdery
practiced
preaching
precocity
preface
prerecord
premature
preservation
prestigious
preventable
primal
principality
privation
procedural
productive
progression
proiong
pronghorn
prophase
protective
protrusible
provoking
pseudonym
ptomaine
puddly
pullout
puncheon
purplish
pycnometer
quadripartite
quarterstaff
quiescence
quotha
radian
railing
ranger
rationalism
react
rebellion
recombination
redden
reestablish
regatta
rejoinder
remedy
reparative
reptile
resistance
resume
retuse
revulsion
ribboned
righteous
riser
rocky
romanticize
rotary
roundup
ruffian
runcinate
ruthenium
saddlesore
salicylate
samovar
sapience
saturnalia
scabies
scary
schoolyard
scorpion
scriber
seabed
seaway
sedate

selectee
sellable
sensationalism
sequential
serviette
severe
shallop
shearwater
shiftwater
shoeblack
shouldest
shutdown
sienna
singer
sitar
skinflint
slattern
slipcase
slurry
smolder
sniffy
sobersided
soiless
somatoplasm
sortie
southland
sparely
spectacled
spicebush
spiritualize
sponson
sprightful
squarish
stadia
stanchian
starry
staysail
stemware
stickball
stirring
stonechat
straggle
streamlet
stripling
stumpy
subjective
substratum
suffice
summation
superficial
supporter
surrogateship
swarthy
swimwear
sympathize
systematic
taffeta
talker
tantalize
taskmaster
teasel
tallable
tennis
territorial
thalamic
theosophic
thievery
thorough
throughout
ticker
timbered
tiptoe
toffee
tonic
torchbearer
touchwood
trackage
trample
transmigration
trawler
triangular
trimaran
trolley
treeborn
tubeless
turbaned
turnip
twofold
ulster
unbeatable
uncross
understandability
unfasten
unionism
unmeasured
unsaid
untruly
upside
useable
vademecum
vandal
vaticinate
venom
versicle
vibratile
vignette
virtuoso
vivisector
voluptuary
vulpine
waldathon
warden
washout
waterman
weaken
weepy
werewolf
wheezy
whirlybird
wholesale
wildlife
windowpane
wisest
womanhood
workability
worthless
wryneck
yardage
yodel
yuletide
zipper
zygote

APPENDIX B

EASY WORDS TAKEN FROM THE WORD FREQUENCY BOOK

ability
about
above
accept
accepted
accident
according
account
across
action
active
activities
actually
added
adding
addition
additional
adjective
affect
afraid
after
afternoon
again
against
agree
agreed
ahead
airplane
alike
alive
allow
allowed
almost
along
aloud
alphabet
already
also
although
always
amount
ancient
angled
angles
angry
animals
another
answer
answered
any
anyone
anything
anyway
anywhere
apart
appear
appearance
appeared
apple
area
army
around
arrange
arranged
arrived
arrow
article
aside
asleep
atmosphere
atomic
atoms
attack
attacked
attention
audience
author
automobile
available
average
avoid
aware
away
awhile
baby
balance
balloon
baseball
basic
basis
basket
battle
beautiful
beauty
because
becomes
becoming
before
began
begin
beginning
begun
being
believe
belong
below
beneath
beside
better
between
beyond
bicycle
bigger
biggest

birthday
blanket
blowing
bodies
bottle
bottom
boxes
branches
breakfast
breathing
bringing
broken
brother
buffalo
building
burning
bushes
business
busy
butter
cabin
calling
candy
capital
captain
carbon
careful
carefully
carried
carry
carrying
cases
castle
cattle
causes
center
central
century
certainly
changes
changing
chapter
character
characteristics
chemical
chickens
children
chosen
circle
circus
citizens
city
classes
classroom
clearly
climate
closely
closer
clothing
coffee
collect
collection
college
colonies
color
colored
column
combination
combine
combined
comfortable
coming
common
community
company
compare
compass
complete
completed
completely
complex
composed
composition
compound
concerned
conditions
connected
consider
considered
consists
consonant
construction
containing
contains
continent
continue
continued
control
conversation
copper
copy
corner
correct
correctly
cotton
counting
country
couple
courage
cover
covered
covering
cowboy
create
created
creatures
crowded
curious
current
cutting
daily
dancing
danger
dangerous
darkness
daughter
decide
decided
degrees
depends
describe
described
desert
design
designed
details
determine
determined
develop
developed
development
diagram
dictionary
differ
difference
different
difficult
dinner
direct
direction

directly
disappeared
discover
discovered
discovery
discuss
disease
dishes
distance
distant
divide
divided
division
doctor
doing
dollars
double
dozen
drawing
driven
driver
driving
during
earlier
easier
easily
eastern
easy
eaten
eating
edges
education
effect
effort
either
electric
electricity
elements
elephant
empty
ended
ending
enemy
energy
engine
enjoy
enjoyed
enormous
enough
enter
entered
entire
entirely
environment
equal
equipment
escape
especially
established
even
evening
event
eventually
ever
every
everybody
everyone
everything
everywhere
evidence
exact
exactly
examine
example
excellent
except
excited
excitement
exciting
exclaimed
exercise
expect
expected
experience
experiment
explain
xplained
explore
express
expressed
expression
extra
faces
factories
factors
factory
fairly
fallen
falling
familiar
families
famous
farmers
farther
fastened
faster
father
favorite
feathers
features
feeling
fellow
fifteen
fifty
fighting
figure
final
finally
finding
finger
finish
finished
fishing
flowers
flying
follow
followed
following
football
forces
foreign
forest
forget
forgot
forgotten
forward
freedom
frequently
friendly
frightened
frozen
function
funny
furniture
further
future
garden
gasoline
gather
gathered

general
generally
gentle
gently
getting
giant
given
going
golden
government
gradually
grandfather
greater
greatest
greatly
growing
handed
handle
hanging
happened
happens
happy
harder
hardly
having
headed
hearing
heavy
helpful
helping
herself
hidden
higher
highest
highly
highway
himself
history
holding
hollow
honor
horses
houses
however
human
hundred
hungry
hunters
hunting
hurried
hurry
husband
ideas
identify
imagine
immediately
importance
important
impossible
improve
inches
include
included
including
income
increase
increased
indeed
indicate
indicated
individual
industrial
industry
influence
information
insects
instance
instead
instruments
interest
interested
interesting
into
invented
involved
iron
island
items
itself
journey
keeping
kitchen
knowing
knowledge
lady
landed
landing
language
larger
largest
laughing
layer
leader
leading
learning
leather
leaving
lesson
level
library
lifted
likely
likely
lion
liquid
listed
listen
listened
listening
little
loaded
local
located
lonely
longer
lovely
lower
lying
machine
machinery
magic
major
manner
many
market
married
master
material
matter
maybe
meaning
measure
measured
medicine
meeting
members
merely
message

metal
method
middle
mighty
military
million
minerals
minutes
mirror
missing
mistake
model
modern
molecules
moment
mostly
mother
motion
motor
mountains
movement
moving
muscles
music
musical
myself
narrow
nation
national
native
natural
nature
nearby
nearest
nearly
necessary
needed
needle
negative
neighbors
neither
never
newspaper
nobody
nodded
normal
northern
notice
noticed
number
numerals
object
observe
observed
obtain
obtained
occur
ocean
offer
offered
office
often
older
oldest
only
onto
opened
opening
operation
opposite
orange
orbit
ordered
orders
ordinary
organized
origin
original
other
outer
outline
outside
over
oxygen
pages
painted
paper
paragraph
parallel
parents
particles
particular
particularly
partly
party
passage
passes
passing
pattern
pencil
people
percent
perfect
perform
period
person
personal
phrases
physical
piano
picture
pictured
pieces
planets
planning
planted
player
playing
pleasant
pleasure
plenty
plural
pocket
poem
poet
pointed
police
political
pony
popular
population
position
possible
potatoes
power
powerful
practice
prepare
prepared
present
president
pressure
pretty
prevent
primitive
principal
principles

printed
probably
problem
process
produce
produced
production
products
program
progress
proper
property
protect
provide
provided
public
pulling
purpose
pushing
putting
quality
quarter
questions
quickly
quietly
rabbit
radio
railroad
rapidly
rather
reaches
reader
reading
realize
realized
reason
receive
received
recent
recently
recognize
recognized
record
refer
region
regular
related
religious
remain
remained
remembered
remove
removed
repeat
repeated
replace
replied
report
represent
represented
required
research
resources
respect
result
return
returned
review
rhythm
riding
rises
rising
river
rocket
rotting
rubber
ruler
running
safely
safety
sailing
sailors
salmon
saying
scattered
science
scientific
scientists
season
second
secret
section
seeing
select
sentence
separate
separated
series
serious
service
setting
settled
settlers
seven
several
shadow
shaving
shining
shorter
shoulder
shouted
signal
silence
silent
silver
similar
simple
simply
singing
single
sister
sitting
situation
sleeping
slightly
slowly
smaller
smallest
social
society
soft.y
soldiers
solid
solution
somebody
someone
something
sometimes
somewhat
somewhere
sorry
sounded
southern
spaces
speaking
special
specific
spelling
spider
spirit

spoken
standard
standing
starting
statement
station
steady
stomach
story
strangers
stronger
structure
students
studied
study
studying
subject
substance
success
successful
sudden
suddenly
sugar
suggest
suggested
summer
sunlight
supper
supply
support
suppose
supposed
surely
surface
surprise
surprised
surrounded
swimming
symbols
system
tables
taken
taking
talking
teacher
telephone
television
telling
temperature
terrible
themselves
theory
therefore
thinking
thirty
thousands
throughout
tiny
title
today
together
tomorrow
tonight
topic
total
tower
traffic
training
transportation
travel
traveled
traveling
triangle
trouble
trying
turning
twenty
uncle
under
underline
understand
understanding
understood
unit
universe
unknown
unless
unlike
until
unusual
upper
upward
useful
using
usual
usually
valley
valuable
value
variety
various
vegetables
very
village
visit
visited
visitors
voices
volume
wagon
waited
waiting
walking
watching
water
wearing
weather
western
whatever
whenever
whereever
whether
whispered
willing
window
winter
within
without
woman
wonder
wondered
wonderful
wooden
workers
working
worry
writing
written
yellow
yesterday
younger
yourself
zero

COURSE WORK FOR MASTER'S DEGREE IN READING

Summer, 1975		Instructor
299:515	Reading for Secondary, College and Adult Students	Dr. Goldsmith
830:324	Psychology of the Adolescent	Dr. Houston
830:371	Personality	Ms. Ginsberg
610:521	Materials for Children	Dr. Greene
Fall, 1975		
299:561	Foundations of Reading Instruction	Dr. Fry
Spring, 1976		
251:523	Language and Culture	Mr. McCarten
290:501	Introduction to Educational Tests and Measurements	Dr. Geyer
Summer, 1976		
299:564	Remedial Reading	Dr. Zelnick
299:565	Laboratory in Remedial Reading	Dr. Zelnick
Fall, 1976		
299:566	Seminar in Reading Research and Supervision	Dr. Swalm
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Spring, 1977		
299:599	Master's Thesis Research	Dr. Fry