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READABILITY CRITERIA USED IN MATERIALS SELECTION FOR ENGLISH AS A SECOND LANGUAGE.

THE UNIVERSITY OF ARIZONA, PH.D., 1978
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READABILITY CRITERIA USED IN MATERIALS SELECTION FOR ENGLISH AS A SECOND LANGUAGE

by<br>Jean Ann Zukowski/Faust

A Dissertation Submitted to the Faculty of the COMMIMNEE ON LINGUISTICS (GRADUATE)

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1978

## THE UNIVERSITY OF ARIZONA

GRADUATE COLLEGE

I hereby recommend that this dissertation prepared under my direction by Jean Ann Zukowski/Faust entitled

Readability Criteria Used in Materials Selection for English as a Second Language
be accepted as fulfilling the dissertation requirement for the degree of Doctor of Philosophy


As members of the Final Examination Committee, we certify that we have read this dissertation and agree that it may be presented for final defense.


November 21,1978


Final approval and acceptance of this dissertation is contingent on the candidate's adequate performance and defense thereof at the final oral examination.

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#### Abstract

The selection of reading materials by teachers in bilingual or English as a Second Language (ESL) programs appears to be based on non-defined informal standards and criteria. At the same time, publishers are offering such varieties of materials that their selection has become a far more demanding task; a text-book committee cannot examine all the available texts. Furthermore, today's teachers need more materials for individualized lessons. Not even a teacher who is familiar with the topic content of a textbook can make a quick reevaluation of its reading difficulty.

This study investigates the use of an already existing material assessment tool, in an effort to provide the teachers, school administrators, and publishers with a consistent and systematic method of materials evaluation.

Already existing tools include a barrage of readability formulas, a number of word frequency lists, and a computer analysis of written word frequency. Within the criteria for the readability formulas lie elements which (in studies with native-speaking readers) have been proven relevant in judging the reading difficulty.

These reading difficulty criteria form the basis of a questionnaire which was answered by both experienced and inexperienced teachers. The results of the questionnaire analysis indicate that some of the readability criteria also apply, in the estimation of the


teachers themselves, the the assessment of readability of materials for the non-native speaker. Others of these readability formula elements are not relevant in the teachers' opinions.

CHAPTER 1

## INTRODUCTION

This study is concerned with the criteria applied in materials assessment for bilingual education or English as a Second Language (ESL) programs as judged by teachers in these two educational situations. The particular criteria investigated form the bases of established readability formulas which were developed to assess the reading levels of materials for native speaking readers.

Statement of the Problem
Secause of the lack of an accurate and consistent measuring device, assessment of the reading difficulty level of ESL and bilingual materials is not an easy task. Furthermore, without established criteria, the same judge might assess the same material differently on two separate occasions. As a result, the teachers select materials using their experience, judging intuitively the difficulty of sentences by observing vocabulary range, topic, sentence length, and complexity of structure. Teachers without much classroom experience or ESL teaching training, then, might select materials of inappropriate weight for their classes; they are more likely to refer to publishers' or writers' assessments of difficulty.

Reading specialists have developed tools such as readability formulas and word frequency lists for use in evaluating native speaker


#### Abstract

reading materials. Although some of the reading problems of the second language learner are obviously different from the native speaker, the individual elements within the readability formulas are part of the experienced teacher's assessment of the text materials. The teachers themselves, usually native speakers of English, unconsciously apply native speaker criteria to the materials they evaluate. Also unconsciously, the experienced teacher assesses the difficulty he or she knows the second language learner will encounter with new material. It is this hybridized set of criteria which needs defining, clarifying, and restating. Only through research into the teachers' perception of relevant criteria as compared with the assessment of materials using the established formulas will the criteria for ESL-bilingual materials selection be extrapolated.


## Significance of the Problem

Because of the Lau vs. Nichols decision (Cordasco 1976, p. 268) more teachers are finding themselves involved in second language teaching--and at all levels. These professionals, sensitive to the needs of students, are likely to locate appropriate materials. The effort required, however, is often a deterrent. Furthermore, numbers of these teachers are not trained in second language instruction. They are not always likely to find the best available materials, especially since they need to rely on publishers' or writers' assessments of appropriateness. Lack of experience or specific training in ESL or bilingual education, therefore, appears to be a handicap in materials selection. Standardized bilingual grade
level materials have not become widespread for the reason that there are no formulas which can be applied for any one language group of ESL students. There is another contributing factor. The native speaker contaminates his evaluation of readings as any monocultural person naturally would. These two conditions point out the need for investigation into relevant elements of material difficulty for this special student population.

An English teacher trained in reading can select literature to match the reading skills of his pupils. Ideally all teachers of English should have a course in reading. The 1967 "English Teacher Preparation Study" under the direction of William P. Viall, Executive Secretary of the National Association of State Directors of Teacher Education and Certification, gives as Guideline II,B, that teaching reading should be in the background of teachers of English in the secondary schools. (Viall et al., 1967, pp. 884-885.) Such a case is actually rare. The Classroom teacher of English is more often dependent upon his literature anthology for selection of literature. (Davis 1969, pp. 2-3)

Since 1969 the problem of materials has become worse. The number of students needing special help has multiplied; the variety of cultural backgrounds has increased, and the popular use of any standardization has not evolved. More English teachers have studied reading instruction, but the problems they now face include non-native speakers in both regular and special classes who must, according to law, be afforded the individual opportunities to learn the English language (Bilingual Education Act in Cordasco 1975, pp. 272-289). The established readability formulas, of course, apply only to native speaking readers. In fact any readability formula can, by definition, apply only to a specific population. A readability formula for ESL students with Spanish home language would not apply to
any other home language group. Yet as the practical evidence in ESL teacher training has shown, contrastive analysis yields little, if any, more than error analysis; Mary Jane Cook points out that a problem can be solved at either the beginning point or the end point (Cook in Turner 1973, pp. 241-249). The criteria upon which native speaker readability assessment are based can yield information about the reading process in English for anyone. The applicability of each of these criteria to non-native speaking populations within the school system can be checked. The information from such a study will enlarge the body of knowledge surrounding reading instruction in a bilingual-ESL situation. The indication of the most relevant criteria of readability assessment for any one group will determine the readability formula which most closely matches the requirements of that group. Furthermore, the study will provide a basis for further investigation of an ESL standardized assessment instrument--and indeed whether such an instrument is feasible.

## Assumptions and Limitations

This study assumes that some reading selections are easier to read, that there are identifiable and measurable elements within each selection which make it easier to rear, and that the ESL reader is also affected by these criteria, though perhaps in a different way. In other words, this study is predicated on the premise that there are several elements which together contribute to the difficulty of a reading selection and that measurable differences within each of these elements can affect the level of difficulty. (Two other general
sources of difficulty also contribute: sophistication of theme and idea concentration. While these two factors can be indirectly measured by vocabulary, judging the appropriateness of a selection for a specific age or language-ethnic or experience group must remain with the teacher.)

Measurable elements include the following selection constituents: 1) vocabulary, 2) sentence length, 3) sentence structure, 4) frequency of the verb to be, 5) the number of personal words (human interest), 6) the number of affixes, 7) the number of concepts (especially nouns and verbs) per sentence, 8) the number of prepositional phrases, 9) the length of the selection, 10) the number of syllables compared to the number of words (big word measure), and 11) the complexity of verb forms.

Subjectively assessed elements include appropriateness of topic for the students, cultural differences between home and target language culture, the number of easy-to-sound-out words, the number of true cognates, the size of the print, and appropriate illustrations.

The assumptions of each of the "measurable" criteria follow:

1) Vocabulary. Since there are word frequency lists (Thorndike, Thorndike-Lorge, and Kučera-Francis) and reading difficulty lists (The Dale List of 769 Easy Words, the 3000 Word list of words known by 80 percent of all fourth-graders, and C. K. Ogden's Basic English List), the number of words in a passage which do not appear on a specific list can be said to constitute an element of difficulty (or ease) in reading (Chall 1958, p. 45).
2) Sentence Length. As a simple sentence in English requires only two words, the total number of words per sentence is a direct measure of the concept-load of the sentence. The longer the sentence is, the more likely it is to have embedded structures, complex verb forms, and absolute constructions (Klare and Buck 1954, pp. 42-44).
3) Sentence Structure. The presence of certain words or marks of punctuation in a sentence can signal complexity of verb (e.g., has, have, been): and embedded structure can be signaled by a conjunctive adverb and/or a comma; compounding can be detected by a number of coordinating conjunctions and/or semicolons (Chall 1953, p. 45).
4) The Frequency of the Verb To Be. The verb to be occurs in the simplest of English sentences and in passive voice constructions. Thus the number of verbs to be (and the number of past participle forms of other verbs) can measure the verb difficulty of a passage. Since most second language learners become familiar with the be verb first, a passage incorporating no other verbs and no past participles would, this study assumes, be easier than one loaded with other types of verbs (Chall 1958, p. 24).
5) Human Interest. The number of personal words (names, pronouns) is considered an indication of difficulty because the more abstract a passage is, the fewer personal words are likely to occur (Chall 1958, pp. 30-31; Flesch 1951, pp. 3-9).
6) The Number of Affixes. Prefixes and suffixes (other than the $\{-Z\}$ and $\{-D\}$, are also considered abstract-ifiers. A study of the most common words on the words lists shows that the common words
are short and unacorned and that rarer words frequently have affixes (Chall 1958, p. 31). (See Aonendix A.!
7) The Number of Concepts per Sentence. It is assumed that if function words are eliminated, the remaining words-mouns, verbs, adjectives, and adverbs--all carry concepts. Therefore, the number of concepts can be counted in a sentence, although of course compounds like noun-noun phrases (school bus or lunch box) or nounadjective phrases (bone dry or forest green) somerwhat affect the count of concepts. Woris like a and the make a sentence easier to understand; they indicate number and signal that a noun (eventually) follows. Nords like common, concept, and count carry the burden of meaning, so the number of words of substance affects the concept load of the sentence. It is assumed that the more there is to understand, the harder it will be for a reader to process and grasp all of the meaning as one unit of expression (Chall 1958, p. 46).
8) The Number of Prepositional Phrases. This study assumes that prepositional phrases add reading difficulty in two ways: a group of words acting as a unit is not understood as easily as a single word, and by their nature--showing the relationship between a noun or verb head word and the object--they complicate meaning. Therefore, each prepositional phrase adds more than the sum of its parts to the potential problem of decoding a reading passage (Chall 1958, pp. 24, 46).
9) The Length of the Selection. This study assumes that the readability of any passage can be measured by using a one hundred word sample for a short selection and several such hundred-word
samples averaged for a longer selection. However, the shorter the total selection, the more concisely the ideas are likely to be presented and the less potential developmental space there is. Therefore, a reading passage of book length is less likely to be understood as quickly as separate passages equal in length to the book in which the development of ideas is both faster and more limited (Chall 1958, p. 7).
10) The Number of Syllables Compared to the Number of Words. The ratio of syllables to words indicates average word length. Again, as in the case of the vocabulary element, a study of the word lists shows that the highest ranking words (both in frequency and in common occurrence and knowledge by fourth grade students) are short (Fry, Journal of Reading, April 1968). (See Appendix B.)
11) The Complexity of Verb Forms. Similar to the measurement of sentence structure, the complexity of the verb can be measured by the number of words per verb phrase and/or the incidence of have, had, or been. This study assumes that counting the number of times these words occur per one hundred word sample would indicate relative complexity of verb form.

Some of these readability elements are used in each of the formulas which were applied to the sample selection part of the questionnaire base of this study. These readability formulas are assumed to reflect use of the established criteria.

## Definition of Important Terms


#### Abstract

Readability For purposes of this study, readability is a composite and relative measure of the established formulas of Spache, Fry, DaleChall, Lorge, Flesch, and Yoakam. These formulas were all designed to be used absolutely with specific grade levels; therefore, the results of applying all the formulas to the same three readings might appear somewhat confusing. However, that all the formulas rank the readings in the same order and separate them by approximately one grade level is the relevant point. All the formula results agree on the relative difficulty of readability of the selections. The formulas, their applications, and the results are described in the second chapter of this study.


The Established Criteria
The criteria which are employed within the readability formulas and discussed at length in both Chapter 1 and Chapter 3 are assumed to reflect reading level.

An ESL Reader
The person learning to read English as a second language probably already reads another language, usually his first language. If he does indeed read another lanquage, then he differs from the native-speaking reader in the following ways. First of all he differs in his ability to perform the physical act of reading. His eyes can already move along a pattern to pick up meaning clues; although the
first-learned pattern might not match that of the English
left-to-right, the brain connections involved in reading have already been established and practice in left-to-right eye movements should rectify the physical difficulties with reading.

Secondiy, the ESL reader is limited by the words and structures he has learned and not only by what he has learned to read. By the time he learned to read his first language, he had already mastered most of the structures of his first or home language (Smith 1975, p. 158). He was not actively involved in acquiring the grammar of that language; instead he was learning to decode already understood Eigures. The ESL reader learns to read as he learns to speak, so the problems are likely to exceed those of a person learning to read a language he has internalized.

Third, the ESL reader has an intellectual capacity which surpasses his ability to decode in English. He, like the able-retarded reader, can mentally manipulate concepts for which his skill in reading is lacking. The ESL reader's handicap is that his English language development is lacking, and therefore he lacks reading ability. Because of this difference between ability and skill, the potential for both frustration and boredom is even greater for him than for a first language reader (Pierce, TESOL Quarterly, September 1975, p. 253).

Fourth, the ESL reader is influenced in his reading by his first language. That is familiar to him as a shared characteristic in the decoding process of his first language will be easier for him to grasp than an English characteristic which differs greatly from
his first language. In this one area, a contrastive analysis of English and his home language could predict the troublesome elements (Smith 1973, p. 27).

Fifth, the ESL reader brings more experience to the reading process than the first-language first-grade reader. He has some ideas of logical thought development, introduction, and summary; even though these elements of rhetoric might be quite different in his Eirst language, he does know to expect them. This anticipation of content gives him a head start in learning to read English (Been, TESOL Quarterly, September 1975, p. 235).

## CHAPTER 2

REVIEN OE SELECTED SOURCES

The literature related to this research involves the nature of reading, the concept of readability, and the specific problems of the ESL reader.

The Nature of Reading
"To read the printed pace is an act of skill which involves all the higher inental processes--association, judgment, and reasoning" (Yoakam 1934, 2. 440).

Fries (1963, p. 120) says, "The process of learning to read - . . is the process of transfer from auditory signs for language signals . . . to new visual signs for the same signals."

Frank Smith (1971) says that "Reading is a specialized and complex skill involving a number of more general skills that have to be understood in any serious analysis of the subject" (p. 1). Processes such as visual iiscrimination, visual selectivity, and pattern recognition are parts of the process of reading (p. 106). Terms like feature analysis and template-matching describe what the non-human reader (i.e., a computer) does which the human reader must also do (p. 108). Processing ideas is the next step. Smith says that readers discriminate and analyze the minimal units (letters, \%ords, or phrases) through either parallel or serial processing, in groups or
singly (p. 137). Next the reader categorizes and organizes ideas (p. 188).

In any case, short-term memory holds the ideas until closure of some sort can be made, allowing the information to pass into a long-term memory storage area of the brain where it is subject to recall but not cluttering the foyer (inirsch 1977, p. 120). In fact, Hirsch says, the information is "recoded into a relatively abstract form" (p. 120).

Reading depends on the redundancy of the language (Smith 1971. 卫. 20), thematic tags, and the transitions of the reading passage (Hirsch 1977, pp. 120, 123). Meaning and the interrelatedness of ideas come to the reader only when these pieces all fit together.

Kenneth S. Goodman (Smith 1973, pp. 22-23) calls reading "a psycholinguistic process by which the reader (language user) reconstructs, as best he can, a message which has been encoded by a writer as a graphic display." However, he says that the "writerencodes, reader-decodes" model is too simple a view. Other dynamics are involved. He says that in producing spoken language the speaker has thoughts to express. Explained in transformational terms, the speaker creates a deep structure which holds the meaning, he applies grammar rules to that body of meaning, and speaks the resultant surface structure. He might also choose to write that transformed thought if he is literate. The process is the same for spoken or written thoughts.

The receptive process of language begins with hearing or seeing. The end result is comprehension. The processes of language
reception, Goodman continues, are sampling, predicting, testing, and confirming (Smith 1973, p. 23).

Sampling is relying on the redundancy of language, that repetition of clues which are inherent in what Hirsch (1977, p. 124) calls chomatic tags. Sampling is using one's awareness of linguistic: restraints.

Predicting is anticipating structures, closures, and vocabulary, according to Goodman (Smith 1973, p. 23). Hirsch calls this the principle of expectation-fulfillment (Hirsch 1977, p. 82). Firthian linguists describe this phenomenon very clearly. They identify separate "contexts of situation" and use the term "collocation" to describe the tendency of some vocabulary items to occur together in these contexts. For example, a discussion of automobiles is likely to contain vocabulary items (collocates) such as drive, wheels, chassis, transmission, brakes, and possibly even sleek. However, it will almost certainly not use student, camera, diaper, or gossip; each of these words belongs in a different context (Malmstrom and Lee 1971, p. 117). Furthermore, the type of reading matters. According to Yoakam (1934, pp. 447-448), what a reader expects to read might affect his ability to predict:

Tests have shown that pupils who have been trained to read story material exclusively have difficulty in adjusting themselves to factual material such as met in geography and history. This difficulty is due to differences in vocabulary, structure, style, content, and type of mental reaction required to read such materials.

Testing is the next process in Goodman's explanation of reading. He says that testing means checking the information being
taken in (as plausible or not) against the other information the reader has absorbed. After the reader has fitted the pieces together, his understanding is confirmed (Smith 1973, p. 23).

Confirming is feeling a sense of whole meaning from a reading unit; a disconfirmed piece of reading (perhaps one the reader did not expect to encounter or perhaps a new word) is probably read and reread again and again until understanding occurs--with or without it (Hirsch 1977, p. 93).

Goodman and Hirsch agree on these four processes in reading, and Hirsch goes further. He believes that reading ease and aural comprehension ease (readability and listenability) are the same (Hirsch 1977, p. 94). Goodman notes that the listener is aware of the situation already; he is part of it, so he infers from the situation he is in (Smith 1973, p. 24). The reader, on the other hand, must rely on those clues which the writer chose to give him.

Goodman reduces the reading process to three cue systems. The first is graphophonic. The reader reacts to the word/sounds written on the page. Goodman believes that the reader response is at the morphophonemic level, not the phoneme-grapheme level. His reason for believing this is the fixed and standardized spelling of most modern languages; the correspondences between sound and spelling will decrease in time (Smith 1973, p. 25).

The second cue which Goodman defines in the reading process is a syntactic one. The reader uses markers of various kinds to recognize and predict structures (Smith 1973, p. 25). Function words signal meanings of grammatical structures (Fries 1963, p. 106).

Inflectional suffixes do the same thing (Smith l973, p. 25). Nords like that and which signal subordinate clauses (Hirsch 1977, p. 128). These signals are a reader's clues.

The third cue that a reader uses is semantic. Goodman says that the reader "must be able to provide semantic input." In other words, he must have enough background and experience to put into reading to be able to make sense out of it (Smith 1973, p. 25).

Lillian Gray, in her book Teaching Children to Read (1963, p. 281), emphasizes the importance of experience: "An adequate background of concepts is a basic factor in comprehension, for such a background is inevitably paralleled by growth in the meaning vocabulary."

The Concept of Readability
To the general public, readability is that quality which makes a reading easy and enjoyable.

To Jeanne S. Chall, author of the definitive book on the subject, readability is much more. It is a measurement of the reading difficulty of a selection, including legibility, interest, and ease of understanding.

Chall's book, Readability: An Appraisal of Research and Application, attempted to include all the readability studies which were "methods logically significant" (Chall 1958, p. 8). This she interprets to mean those studies which showed evidence of the internal factors which affect comprehension and point out ways to predict and control the level of reading difficulty.

The criteria which Chall found to be used most often as predictors are those used in the present study. Six of the formulas that Chall presented are used in the present study.

Furthermore, Chall notes the effects that readability studies have had on the world outside the elementary school classroom.

Adult education was affected. The principles which made reading easier could be used in writing to create the easier readings (Chall 1958, p. 143).

George R. Klare, however, recognized the potential pitfalls of writing with readability formulas in one hand. He warned that readability formulas "are not cookbook recipes for writing. They are for rating material, not writing it, and do not even measure all of the significant aspects of writing . . . that should be rated. . . . They measure only those aspects of writing that tend to make it difficult, not all those that are important in good writing" (Klare and Buck 1954, p. 16).

Another far-reaching effect was on official papers, for Irving Lorge made an impact on government publications in 1939. At a seminar on Evaluation of Government Information Services, he presented his readability formula and suggested uses for it. Lorge, Dale, and Flesch all worked with government officers to make government publications more accessible (that is, more readable) to the public (Chall 1958, p. 146).

Rudolf F . Flesch made plain talk more fashionable. The effects on journalism were far-reaching (Chall 1958, p. 147).

The principles of control in writing according to the principles of readability have been used in tests and questionnaires as well (Chall 1958, p. 150).

According to Chall (pp. 154-155) the search for objective means of determining readability was prompted by three major purposes:

1. to isolate the internal factors which validly distinguish easy from difficult material
2. to find a reliable way to measure these factors
3. to formulate an expression of a combination of these factors in terms of the reading skills necessary to read the material with comprehension.

The three approaches to the study of these purposes were quantitative associational studies, opinion surveys of experts and readers, and experimental studies.

The major conclusions of Chall's study (pp. 156-153) are these:
a. that a variety of factors contribute to reading difficulty including content, stylistic elements, format, and organization;
b. that up to the time of the study only stylistic elements had been amenable to quantitative measurement and verification;
c. that only four types of stylistic elements related to reading difficulty (vocabulary load, sentence structure, idea density, and human interest) had been found to be reliably measured and significant:
d. that of all types of stylistic elements, vocabulary load (both the diversity and the difficulty of vocabulary) was the most significant isolated that far;
e. that vocabulary diversity works well in determining reading difficulty of easy materials, but that it is not significant as a predictor of vocabulary difficulty; that vocabulary difficulty can be measured by reference to a word list or by word length; and that the higher the proportion of unknown words in a passage, the harder it will be to read;
f. that judging semantic difficulty of words had not been feasible up to that time;
g. that every study up to that time had found a significant relationship between reading difficulty and sentence structure as measured by sentence length, comparison of number of simple sentences to compound or complex ones, and sentence length as measured by syllables;
h. that readability formulas measure idea density only indirectly through the percentage of prepositional phrases and/or percentage of different content words;
i. that human interest can be measured by number of personal pronouns, persons' names, and nouns denoting gencer; that dialogue makes reading easier; and that dialogue addressed to the reader is less difficult to understand.

Chall's work (pp. 153-160) has implications for further reading research:

1. to refine existing criteria
2. to extract new ones
3. to refine factors already known
4. to identify the qualitative aspects of readability.

Some of Chall's questions are answered by Hirsch. He suggests that vocabulary in itself is not the whole of the difficulty which hard words constitute; instead he suggests that the loaded complex structures (worthy of hard words) in which these words occur are responsible for the difficulty. Repeated hard words, therefore, are not as troublesome as different hard words. Hard words in simple structures are not so difficult. Hard words in predictable contexts are not that hard (Hirsch 1977, p. 118).

Hirsch offers the 1973 Kintsch and keenan measurement of readability as an alternative method (Hirsch 1977, p. 125). This method counts the number of propositions in a sentence, a methodology not unlike the determining of immediate-constituents in structural linguistics (putting brackets arounc closely related parts) or identifying the embedded structures which form complex sentences. Thus the following sentence contains two Kintsch-Keenan propositions:

The Greeks loved beautiful art.
Proposition 1: Greek - love - art
Proposition 2: art - (is) - beautiful (Hirsch 1977, pp. 126127).

Hirsch points out that whether right- or left-branching is used makes a difference in short-term memory load. Here are two examples:
a) a bright, witty, efficient secretary
b) a secretary who is bright, witty, and efficient

More people can process $\underline{b}$ and describe the secretary better. The implication for the ESL reader is obvious (Hirsch 1977, pp. llo112).

Hirsch also suggests use of Wilson L. Taylor's "cloze" method for measuring readability (Hirsch 1977, pp. 94-98). Cloze methodology, now widely accepted as a testing device in reading (Guzak 1972, p. 125), is based on ideas from Gestalt psychology and information theory: the idea that the amount of redundancy (and therefore the amount of reading ease) of a passage can be determined by how much of it can be left out without a change in meaning.

Taylor suggested that blank spaces replace every fifth or sixth word although other reading experts have suggested every tenth word (Guzak 1972, p. 125). Then members of the test group were asked to guess which words went in the blanks. The results showed a high correlation with readability scores as determined by the standard formulas.

The cloze procedure works because it measures the average predictability of text words for a particular reading audience (Hirsch 1977, p. 97). The rate of processing is so much increased by this predictability that many good readers mentally fill in missing words or fail to see that a word or phrase has been printed twice, especially when one is at the end of a printed line and the second at the beginning of the next.

## Implications for the ESL Reader

Theodore Huebener, in his text on foreign language teaching methodology, says, "The second language learner approaches the second language with certain reading and learning habits that are already well established" (Huebener 1965, p. 50). Some of these habits are directly related to his first language. The ESL teacher aims to help the student adapt his reading habits to the new language and to develop whatever new habits are necessary to accomodate the peculiarities which his second reading language demands.

Huebener also suggests some guiding principles for teaching reading to a second language learner. He suggests the following sequence:

1. Motivate the student to want to read the selection with a proper introduction.
2. Anticipate difficulties in vocabulary and structure. Eliminate those words and structures which surpass the student's ability to handle. If necessary, circumlocute.
3. Utilize different reading types such as model reading by the teacher, student oral reading, silent reading by student, reading dialogue in parts (if appropriate) or in chorus.
4. Test comprehension and stop when the student does not understand.
5. Use audio-visual aids.
6. Discuss cultural differences and implications.
7. Practice and study the new words and expressions.
8. Review the selection by retelling the story to the student and then asking the student to do the same.
9. Clarify confusing structures or elements within the reading (Huebener 1965, p. 50).

The National EAucation Association sets a goal for foreign language students: "The student should read the foreign language easily and without conscious translation. . . . He should read rapidly for the sense of the story and more deliberately for fuller understanding" (Michel 1967, 〇. 334).

To achieve this goal the NEA suggests the following progression:

1. First the ESL student should be allowed to read only what he can say.
2. All classroom ciscussion of the reading should be conducted in the foreign language.
3. The student should be encouraged to read more in the foreign language.
4. The teacher should employ several sound methods for reinforcement of the reading: use of questions and answers, antonym-synonym drills, expansion, and paraphrasing (Michel 1967, pp. 338-339).

In his article "Language Analyses and Language Teaching," Archibald A. Hill goes even further in recommending readability control.

In the beginning (ESL reading) class, the students should learn to read using carefully graded readers. Simplified
and controlled vocabulary should be used, and new expressions should be carefully reinforced. Sentence structure (grammatical constructions) must also be controlled (Hill in Michel 1967, p. 105).

According to Hirsch (1977), there seem to be a number of other factors which make a reading difficult; some of them have implications for the second language learner:

1. Uncertainty works against short-term memory (p. 117).
2. Words not formed into stable groups are not as rememberable as those in groups. These unattached words must be retained as individual words. Therefore, the number of units (concepts) held in short-term memory increases, and the chances of forgetting some of them also increase (p. 1ll).
3. Twelve seconds is the average length of time in which "decay" of perceived linguistic form occurs (p. 123). This probably means that if a sentence takes longer than twelve seconds to process, the ESL reader is not truly reading.

In summary, some elements make a reading passage easier; they are identical to those which make re-reading unnecessary (Hirsch 1977, p. 117). A reading is easier if the following conditions are met:
a. The experience related in the passage is common to the reader.
b. Context clues are available for meaning prediction.
c. There are limits to need for short-term memory; the arrangement of sentence elements so that the memory load
for short-term memory is minimized, unlike the periodic sentence (Hirsch 1977, p. 117).

## CHAPTER 3

## STUDY DESIGN


#### Abstract

The study involves development of three components: the participant information sheet, the readings, and the list of potential ESL readability criteria. The development of each of these parts is discussed in detail in this chapter.


## Procedural Sequence

Ninety-three teachers and administrators in ESL and/or bilingual situations were asked to fill in a questionnaire. Then they were asked to read and assess the relative difficulty of three controlled reading passages. Third, they were asked to select the most relevant of the readability criteria in a list. It was suggested that they choose five as most relevant. Next the participants were asked to indicate those criteria which seemed to be irrelevant to them. Finally, they were inviter to add any other criteria they use in judging difficulty for selection of materials.

Of the ninety-three participants in the survey, seventy-four determirue the core group of teachers now actively involved in ESL teaching situations. These teachers are divided into four groups for purposes of this study. The teachers of Spanish-speaking students form the largest group, henceforth designated the S-group. The teachers of foreign students were the next largest constituent of the
core group, the F-group. Next come the teachers of Navajo speakers (N-group) and the teachers of Papagos (P-group). All of the core group is designated the A-group, for purposes of comparison. Some of the statistics which are presented include all of the participants (teachers, administrators and others); this group is the combined group (C-group).

The numbers of each group:

$$
\begin{aligned}
& \text { S-group - } 33 \\
& \text { F-group - } 22 \\
& \text { N-group - } 15 \\
& \text { P-group - } 4 \\
& \text { A-group - } 74 \\
& \text { C-group - } 93
\end{aligned}
$$

The data gathered from the survey was organized and analyzed by computer. The results of this analysis are presented in Chapter 4; a summary and further conclusions are presented in Chapter 5.

Development of Materials for Research
All participants were given a packet called "ESL Materials Selection Packet" the first page of which is a participant information sheet. (See the packet as Appendix C.) "The Readings" and "The Criteria" followed.

The Participant Information Sheet
The names and addresses of all participants in the survey were requested, in case subsequent correspondence should be necessary.

Next participants were asked to identify themselves as teachers, administrators, and/or students. Questions regarding length of teaching experience, age and language group taught, special training in ESL/bilingual education, and responsibilities for materials selection followed. Finally, participants were asked how long they had been active in the field.

The Readings
Three short reading passages comprise the materials assess ment section of the stury.

The first of these readings is an anecdote, the only one containing conversation. Forty-three percent of the words are contained within quotation marks. This anecdote is therefore the most "personal" of the three readings. The sentence structures are natural but not all simple. The tenses include past and future. Sentence length varies, from eight to twenty-four words. The passage also has a topic of human interest with a twist of parental concern for children.

The reading:
Planning a Hike
One afternoon the youngest three children of the smith family decided to go on a long hike in the forest. The oldest child, Ann, made plans for the next morning.
"Mother," she asked, "would you take us to Hamilton Park early in the morning so we can get a good start on our hike?"
"Sure, I'd be happy to," her mother replied in an un-sure voice.
"And will you prepare a picnic with lots of sandwiches and apples?" asked Billy who was very round and always hungry.
"Certainly, I'd be happy to," his mother agreed.

```
"Mommy," asked Sandy in her tiny voice, "will you come with us too?"
"Of course," Mrs. Smith said, "I'd be glad to."
In fact, it seemed as if she felt good about the hike at last.
```

A one hundred word sample yields the following statistics for this passage:

9 sentences
14.5 word average sentence length

171 syllables in the first one hundred words

15 words not on the Dale List of 769 Easy Vords (Dale 769)
4 words not on the Dale List of 3000 Words (Dale 3000)

10 prepositional phrases
15 personal references
17 affixes

The second reading is descriptive. All the sentences are simple in structure. Simple present tense is used throughout. There are several compound structures: a double object for one preposition, a compound direct object, and a compound verb. The topic is probably more elevated than the first one. Sentence length varies from three to sixteen words.

The First Aid Kit

A first aid kit is a box with first aid supplies. There are several kinds of $k i t s$.

A Eamily first aid kit travels with them. They take it on picnics and vacations. They keep another one at home in the medicine cabinet ans yet another one in the car.

There are special kits for boats. Boat first aid kits are usually orange. Orange is the international color for emergencies. These kits also float. They are waterproof. Water cannot get into them and wet the supplies.

Offices and factories also need first aid kits. Many accidents happen at work.

A one hundred word sample yields the following statistics for this reading:

14 sentences
7.3 word average sentence length

146 syllables in the first one hundred words
14 words not on the Dale 769

4 words not on the Dale 3000

11 prepositional phrases
7 personal references

16 affixes

The third reading is simple. The topic is general, and though somewhat abstract, the information is part of nearly every person's awareness. All sentences are simple in structure. The only tense is the simple present. The longest sentence is nine words long. The shortest is three words. The sentences do not vary much in length. The Nonders of Nature

Our world is interesting. Many parts of it are unusual. There are many things to study.

We study nature. Nature is plants and animals. Nature is weather. Nature is everything on Earth.

Plants are large and small. Some are too small to see. Some are very large. Some plants have leaves. Some do not have leaves at all. Most plants are green. Some are not. plants are interesting to learn about.

There are many kinds of animals too. There are animals of all sizes. Animals are interesting to study.

Weather is an important part of nature. Our lives change with weather. Weather affects everyone. Farmers worry about sun and rain. Storms destroy homes and fields.

Land, water, and air together hold all of nature. Each part of nature is different. There are many wonders to learn about.

Number of Nords Number of Sentences per Sentence That Length
3.................... 4
4. . . . . . . . . . . . . . . . 4
5.......... . . . . . . . 8
6. . . . . . . . . . . . . . . . 6

7 . . . . . . . . . . . . . . . . . 3
9 . . . . . . . . . . . . . . . . . 1

This closeness to the average sentence length (5.15) and the mean sentence length (5) is unusual in any reading (Kučera and francis 1967, p. 258).

The one hundred word sample shows the following values for the reading passage:
19.5 sentences
5.15 ivord average sentence length

135 syllables in the first one hundred words

5 words not on the Dale 769

2 words not on the Dale 3000

9 prepositional phrases
6 personal references
20 affixes
Zigure 1 gives a comparison of the three readings.

|  | Planning a Hike | The First Aid Kit | Wonders of Nature |
| :---: | :---: | :---: | :---: |
| Sentences | 9 | 14 | 19.5 |
| Average Sentence Length | 14.5 | 7.3 | 5.15 |
| Number of Syllables per 100 :Vords | 171 | 146 | 135 |
| Words Not on Dale 769 | 15 | 14 | 5 |
| Words Not on Dale 3000 | 4 | 4 | 2 |
| Prepositional Phrases | 10 | 11 | 9 |
| Personal References | 15 | 7 | 6 |
| Affixes | 17 | 16 | 20 |

Figure 1. A Comparison of the Three Reading Passages

Results of the Application of the Readability Formulas on Readings

| "The Wonders of Nature" |  |
| :---: | :---: |
| Fry | 2 (second grade) |
| Spache | 1.995 (second grade) |
| Dale-Chall | 4.2 (fourth grade) |
| Lorge | 3.68 (third grade) |
| Flesch | 5.23 (fifth grade) |
| Yoakam | 3 (third grade) |
| Average score $=3.36$ |  |
| "The First Aid Kit" |  |
| Fry | 4.9 (almost fifth grade) |
| Spache | 3.07 (third grade) |
| Dale-Chall | 4.63 (fourth grade) |
| Lorge | 5.10 (fifth grade) |
| Flesch | 5.3 (fifth grade) |
| Yoakam | 7 (seventh grade) |
| Average score $=5.05$ |  |
| "Planning a Hike" |  |
| Fry | 7 (seventh grade) |
| Spache | 4.05 (fourth grade) |
| Dale-Chall | 4.99 (fifth grade) |
| Lorge | 5.6 (fifth grade |

Flesch 6.3 (sixth grade)
Yoakam 8 (eighth grade)
Average score $=\underline{5.98}$
Readability Scores by Formula
The Fry Formula
"The Wonders of Nature" ..... 2
"The First Aid Kit" ..... 4.9
"Planning a Hike" ..... 7
The Spache Formula
"The wonders of Nature" ..... 1.995
"The First Aid Kit" ..... 3.0702
"Planning a Hike" ..... 4.06
The Dale-Chall Formula
"The :Nonders of Nature" 4.2077
"The First Aid Kit" ..... 4.6294
"Planning a Hike" ..... 4.9873
The Lorge Formula
"The 'vonders of Nature" ..... 3.68
"The First Aid Kit" ..... 5.10
"Planning a Hike" ..... 5.57
The Flesch Formula
"The Wonders of Nature" ..... 5.23
"The First Aid Kit" ..... 5.7983
"Planning a Hike" ..... 6.30
The Yoakam Formula
"The Wonders of Nature" ..... 3
"The First Aid Kit" ..... 7
"Planning a Hike" ..... 8
Average Readability Scores
"The Wonders of Nature" ..... 3.35
"The First Aid Kit" ..... 5.05
"Planning a Hike" ..... 5.98

## The Potential ESL Readability Criteria

Sixteen criteria were suggested as potential ones for judging the difficulty of a reading selection for an ESL/bilingual student. The teachers were first asked to select those criteria which they considered most important. It was suggested that five would be an appropriate number to select; however, the participants were free to indicate fewer or more. Then they were asked to mark any criteria on the list which they considered irrelevant. All the criteria utilized by the six readability formulas are included on the list: vocabulary, sentence length, number of prefixes and suffixes, number of prepositional phrases, human interest, and number of syllables. Also included are the other more subjectively evaluated criteria of topic, theme, or subject; sentence structure; cultural differences, frequency of the verb to be; number of concepts; easy-to-sound-out words; size of print; length of piece of writing; appropriate illustrations; and complexity of verb forms.

Space was also allotted for suggestions of other possible criteria.

The Readability Formulas Used
Readability formulas in general are used to facilitate analysis of what makes a reading passage difficult (Chall 1958, p. l6). Sy using their own learned judgment, through extensive comprehension testing, by comparing estimations with those of librarians, and by assessing the average reading ability of those who enjoyed the
readiny, researchers have established a range of difficulty (Chall 1958, p. 16). Subsequently, the internal factors, those extractable quantities of a reading passage, have been analyzed further, ultimately resulting in a plan or formula for determining readability. The importance of vocabulary has probably always been understood. However, Thorndike's Teacher's Word Book of 10,000 Words in 1921 provided the first objective means of measuring the vocabulary of a reading (Chall 1958, p. 17). Refinements such as the Dale List of 769 Easy Words, the Dale List of 3000 Words Known by 80 Percent of All Fourth Graders (Dale 1931, pp. 484-489), and the Dolch List (Dolch 1949, pp. 142-149) have made judgment of vocabulary difficulty even easier. Thus a vocabulary "score" is readily available for researchers.

The relevance of sentence length is also recognized in that four of the six formulas used in this study require average sentence length as a component (Chall 1958, pp. 48-51).

Also, that each noun, verb, adjective, adverb, and subordinated structure add to the concept load of the sentence is obvious. To simplify a passage, the length of the sentence should be shortened and paragraphs broken up (Flesch 1951, p. 26). Flesch even suggests turning dependent clauses into independent ones. In fact, Marckworth and Bell's study of sentence length distribution in the Kučera-Francis computerized English language analysis indicates that their study has led them to believe the length of sentence "may be the indicator of the range of grammatical
stylistic devices allowed within the confines of a genre pattern" (KuČera and Francis 1967, p. 374).

The readability formulas used in this study focus on different aspects of the passage. The following chart (Figure 2) shows which formulas are used, which measurable elements are included in each readability formula, the value of the constant--if any--used in the formula, and the reported $R$ values for each.

| Formula | Measurable Elements | Constant | R Value |
| :---: | :---: | :---: | :---: |
| Fry | Average sentence length Syllables/100 words | * | (Not available) |
| Spache | Average sentence length Hard words (Dale 769) | . 839 | $\mathrm{R}=.818$ |
| Dale-Chall | Hard words (Dale 3000) Average sentence length | 3.6365 | $\mathrm{R}=.70$ |
| Lorge | ```Hard words (Dale 759) Average sentence length Prepositional phrases per 100 words``` | 1.61 | $\mathrm{R}=.77$ |
| Flesch | Average sentence length <br> Affixes per 100 words Number of personal references | 4.2498 | $\mathrm{R}=.74$ |
| Yoakam | Vocabulary (Thorndike) | -- | $\begin{aligned} & R=.82- \\ & .91 \text { for } \\ & \text { grades } \\ & 4-6 \end{aligned}$ |

Figure 2. Components of the Readability Formulas Useत in This Study (Chall 1958, pp. 48-51)

The asterisk indicates that the constant of the Fry formula is inherent in the graph which is used to "read" the resulting grade level after determining the ASL and the number of syllables per one hundred word sample.

The Fry Formula from a Journal of Reading in April 1968 uses the number of words per sentence and the number of syllables. Since each word is at least one syllable, since most affixes add a syllable, and since the number of polysyllabic words indicates a general level of rifficulty of vocabulary, a measure of the word level is built into this graph-read readability assessment. The scope of the Fry formula is grades one through second year of college.

The Spache Formula from the Elementary School of March 1953 measures vocabulary through the Dale List of 769 Easy Words. Average sentence length is also used in the formula. The Spache formula generally applies to grades one to five; therefore, the constant (.339) is low.

The Dale-Chall Formula in a 1948 Educational Research Bulletin bases vocabulary assessment on the Dale List of 3000 Nords. Average sentence length is also used in this formula. The constant (3.6365) indicates projected use with grades four to eight.

The Lorge Formula from School and Society, also in 1948, used the number of prepositional phrases per one hundred words in addition to the average sentence length and the number of hard words, in this case, those not on the Dale List of 769 Easy Words. The formula has been applied at all grade levels (Chall 1958, p. 85).

The Flesch Formula from Marks of Readable Style in 1943 applies to higher grade level readings; thus the constant is high--4.2498--so no possible reading below 4.2498 can result from the application of the formula. Other factors within the formula are average sentence length and number of affixes per one hundred words.

The Yoakam Formula
uses only vocabulary to assess reading difficulty. The Thorndike word list serves as the reference. The Yoakam formula applies to materials for grades three through fourteen. The working of the formula requires determining a value for each word, based on its frequency according to Thorndike; then the total score (called the unit index number) is computed and read according to a scale. The formula's validity was determined by Stadtlander in 1939 and Latimer in 1948 (Yoakam 1955, p. 330).

Because of the varying constants, these six formulas yield what appear to be widely differing grade level results for the three readings. At first this disparity might seem to be cause for misgivings about the application of the six formulas. However, the individual sets of cata show that the relative readabilities of all three are in accord. In all cases the same reading ("The Wonders of Nature") was assessed the easiest, "The First Aid Kit" was judged in the middle, and "Planning a fike" was jurged the most difficult. (See the Results of the Application of the Readability Formulas on Readings on pp. 33-34.)

Furthermore, the constants and other restrictions within each formula determine the results. For instance, the Yoakam formula's lowest possible measure is grade three.

The concept of relative readability seems indicated here because these assessments are used to test passages with the broadest scope of measurable elements. Whatever these readability formulas
measure, the relative scores indicate which reading passage is most complex in that element.

In fact, the six readability formulas utilize five means of assessing the vocabulary level:

1) The Dale List of 769 Easy Words
2) The Dale List of 3000 Words known by 80 percent of all fourth graders
3) The Thorndike Word Frequency List
4) The number of long words measured by number of syllables per one hundred words
5) The number of affixes.

Elements of human interest and subordination (through average sentence length and number of prepositional phrases per one hundred word sample are also included in these formulas.

## Computer Use in Organizing the Data

The information collected in the ESL Materials Selection survey was fed into the computer and programed according to SPSS: A Statistical package for the Social Sciences (Nie, et al. 1975). The data were analyzed by the computer, the numbers of answers in each category were tabulated, and the percentages of the total population were recorded. However, further computer analysis of the data was not practical. The standard Pearson's correlation coefficient is not anplicable because of the discrete nature of the data.

Answers to the following questions were sought through the computer program:

1. Does readability perception (according to the established criteria) correlate with language group taught? If so, how?
2. Does readability perception as measured by the established criteria correspond to teaching experience? If so, what is the correspondence?
3. Does status and occupation of the participants in any way reflect an ability to perceive readability as based on the established criteria? If so, what conclusions can be drawn?
4. Is accuracy in readability perception according to the established criteria related to present active involvement in teaching? If so, how?
5. Does length of experience appear to have any effect on the teacher participants' ranking of the criteria? If so, how?
6. Does special ESL training affect perception of readability as assessed through use of the established criteria? If so, what are the effects?
7. Does responsibility for materials selection affect a teacher's awareness of the established criteria in that the teacher is more likely to use them? Is the teacher with responsibility for materials selection more likely
to agree with rearability perception as based on the established criteria? If so, how much?
8. Does language group taught affect the rating of each of the criteria? How?
9. Does advanced (degree) training correlate with readability perception according to the established criteria? What difference does an M.A. in ESL make?
10. How do readability criteria considerations of advanced degree participants compare to non-advanced degree participants?

## CHAPTER 4

## PRESENTATION OF THE DATA

The data can be presented in several ways and construed to support any one of four ideas.

If one assumes that the established readability formulas do indeed apply to readings for ESL/bilingual students, there is ample evidence to support this.

If one assumes that the experienced teachers are competent and that the readability formulas reflect teacher assessment ability, the statistics show this too.

There is some evidence to support another idea: that the readability formulas are unrelated to the ESL/bilingual materials selection situation.

The fourth possibility is that the readability formulas do correspond to teacher materials selection criteria, but that the list of component elements is incomplete.

The error analysis model, most clearly reflected in the $F$ Group teaching situation, perhaps holds a clue to the truth in this matter of readability formula (or readability criteria application) relevance. The E-Group's close match with the already established criteria may well indicate that when the particular problems of a language group are not and cannot be in direct and constant focus, the

English language elements which make the reading difficult are exactly the ones naturally used by the teacher. The contrastive analysis model might obscure some of these elements.

The data are presented in this chapter according to the questions which were posed in the computer analysis. In each case in which the data-answer lends itself to graphic or tabular depiction, an illustration or table is included to allow for ease of understanding.

Question 1: Does readability perception (according to the established criteria) correlate with language group taught? If so, how?

The teachers of foreign students (called the F-Group) showed the highest percentage of readability perception according to the established formulas. Seventy-tivo and two-tenths percent of the $F$ Group were in complete agreement. (See Table lA.)

Table 1 A gives the complete breakdown of how the teacher participants evaluated the three readings. The number of participants who were partially correct, misjudging "The First Aid Kit" as the hardest but correct in assessing "The Nonders of Nature" or correct in judging "Planning a Hike" as the most difficult, but misjudging "The First Aid Kit" as easiest, is significant.

Table 18 shows the results of lumping all or partially correct responses to readability perception according to the established criteria. The percentages of participants who appear to have understanding of the principles employed by the formulas are 100

Table 1.

Correspondence Between Language Group Taught and Readability Perception
[Question: How does language group taught correspond to readability perception according to the established criteria (AEC) ?]
A: Full Form
Papago Spanish Foreign Navajo Mixed NA

| Completely | 1 | 14 | 16 | 9 | 1 | 8 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| correct | $(25 \%)$ | $(42.4 \%)$ | $(72.2 \%)$ | $(60 \%)$ | $(33.3 \%)$ | $(50 \%)$ |
| AEC |  |  |  |  |  |  |

Misjudged

| 2 hardest, | 2 | 6 | 3 | 2 | 1 | 2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| correct in | $(50 \%)$ | $(18.2 \%)$ | $(13.6 \%)$ | $(13.3 \%)$ | $(33.3 \%)$ | $(12.5 \%)$ |

3 easiest
Misjudged

| both | 0 | 1 |
| :--- | :--- | :---: |
| (3 hardest, |  | (3\%) |

2 easiest)
Misjudged 2

| as easiest, | 1 | 4 | 2 | 1 | 0 |
| :--- | :---: | :---: | :---: | :---: | :---: |

1 hardest

| Misjudged | 0 | 5 | 1 | 1 | 1 |
| :--- | :--- | :---: | :---: | :---: | :---: |
| 2 as hardest |  | $(15.2 \%)$ | $(4.5 \%)$ | $(6.79 \%)$ | $(33.3 \%)$ |
| 1 as easiest |  | $(6.3 \%)$ |  |  |  |


| Reverse of correct AEC | 0 | $\begin{gathered} 3 \\ \left(9.1 \frac{2}{2}\right) \end{gathered}$ | 0 | $\begin{gathered} 2 \\ \left(13.3 \frac{0}{3}\right) \end{gathered}$ | 0 | $\begin{gathered} 2 \\ (12.5 \%) \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Totals | 4 | 33 | 22 | 15 | 3 | 16 |
| Percent of participants | 4.3\% | 35.5\% | 23.2\% | 16.1雱 | 3.2\% | 17.2\% |

## Table 1, Continued


percent for the small group of Papagos, 95.4 percent of the teachers of foreign students, 80 percent of the Navajo-teaching participants, and 72.4 percent of those who teach Spanish-speakers.

Question 2: Does readability perception as measured by the established criteria correspond to teaching experience? If so, what is the correspondence?

As shown on Table 2, the percentage of correspondence with readability perception increases with length of experience. However, the data show that the greatest increase in awareness of the established criteria which make a reading passage difficult comes within the first year of teaching. The increase of 30.4 percent to 57.9 percent in positive correlation between first year teachers and those with two-to-four years experience is significant.

In the all or partially correct category, the increase between first year and two-to-four years experience is nearly as high, 65.1 percent to 85.1 percent.

Furthermore, the percentage of positive correlations shows a greater increase with five or more years of experience ( 57.9 percent to 62.5 percent), an increase which is the more notable because the all or partially correct group does not show a comparable jump. In other words, it appears that the more experience a teacher had, the more likely he was found to be in complete agreement with the criteria used in the established readability formulas. Experience, it seems, is fine honing.

## Table 2

## Correspondence Between Readability Perception and Length of Teaching Experience

[Question: How does readability perception according to the established criteria correspond to length of teaching experience?]

|  | First year | $\begin{gathered} 2-4 \\ \text { years } \end{gathered}$ | 5 or more years |
| :---: | :---: | :---: | :---: |
| Positive correlation AEC | $\begin{gathered} 7 \\ (30.4 \%) \end{gathered}$ | $\begin{gathered} 22 \\ (57.9 \%) \end{gathered}$ | $\begin{gathered} 20 \\ \left(62.5 \frac{2}{2}\right) \end{gathered}$ |
| All or <br> partially correct AEC | $\begin{gathered} 15 \\ (65.18) \end{gathered}$ | $\begin{gathered} 33 \\ \left(86.1 \frac{1}{3}\right) \end{gathered}$ | $\begin{gathered} 28 \\ (37.5 \%) \end{gathered}$ |
| Negative correlation AEC | $\begin{gathered} 16 \\ \left(69.6 \frac{\%}{3}\right) \end{gathered}$ | $\begin{gathered} 16 \\ (42.1 \%) \end{gathered}$ | $\begin{gathered} 12 \\ (37.5 \%) \end{gathered}$ |
| Completely wrong AEC | $\begin{gathered} 4 \\ (17.4 z) \end{gathered}$ | 0 | $\begin{gathered} 3 \\ (9.4 \%) \end{gathered}$ |
| Totals | 23 | 38 | 32 |

Question 3: Does status and occupation of the participants in any way reflect an ability to perceive readability as based on the established criteria? If so, what conclusions can be drawn?

The results of the question were inconclusive. Generally, administrators and teacher/administrators did slightly better than new teachers in recognizing the relative reading difficulties and new students did only slightly better than chance. However, the number of people in these groups was too small to determine real trends.

Question 4: Is accuracy in readability perception according to the established criteria related to present active involvement in teaching? If so, how?

There was no differentiation in readability perception for people who were presently teaching, who were learning to teach, and who had taught more or less recently than two years before participating in the survey. There were no identifiable trends to present in tabular form. Interestingly, however, 57 percent of those perceiving readability different from the established criteria-formula results chose "The First Aid Kit" as the hardest one.

Question 5: Does length of experience appear to have any effect on the teacher participants' ranking of the criteria?

No, the length of time a teacher had been actively involved in teaching did not predict which of the readability criteria any one teacher would be most likely to select.

Question 5: Does special ESL training affect perception of readability as assessed through the use of the established criteria? If so, what are the effects?

Table 3 shows that ESL training does indeed affect readability perception, according to the established criteria.

In fact, 66.7 percent of those participants with an ESL degree agreed with the formula assessments, compared to 33.3 percent of those without this formal training. Workshops and institutes appear to make participants more aware of elements which make reading more difficult as the participants with workshop and institute experience were 62.5 and 56.5 percent in agreement respectively. The figures for those all or partially correct even more dramatically emphasize the importance of ESL training: 91.7 percent of those with ESL degrees agreed at least in part with the established formulas. Figures for workshop and institute participants were 31.3 percent and 86.9 percent in agreement with formula criteria.

The fifteen participants who have attended both workshops and institutes did not show as high a positive correlation as might be expected. Actually, the percentage for positive correlation is the same as for those without training (33.3 percent). It is true that a greater percentage were partially correct ( 60 percent for non-trained, 80 percent for those with workshop and institute training); however, it seems that there must be another factor involved. Perhaps teachers who are experiencing difficulties in their classrooms are more likely to attend more workshops and institutes, and their relative lack of

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    Table 3
Correspondence Between Training
    and Readability Perception
```

[Question: How does training correspond to readability perception according to the established criteria?]

|  | No training | ESL degree | Workshops | Institutes | Combination of two kinds of training* |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ```Positive correlation AEC``` | $\begin{gathered} 5 \\ (33.3 \%) \end{gathered}$ | $\begin{gathered} 16 \\ (66.7 \%) \end{gathered}$ | $\begin{gathered} 10 \\ \left(62.5 \frac{7}{3}\right) \end{gathered}$ | $\begin{gathered} 13 \\ \left(56.5 \frac{7}{3}\right) \end{gathered}$ | $\begin{gathered} 5 \\ (33.3 \%) \end{gathered}$ |
| All or <br> partially <br> correct AEC | $\begin{gathered} 9 \\ (60 \%) \end{gathered}$ | $\begin{gathered} 22 \\ (91.7 \%) \end{gathered}$ | $\begin{gathered} 13 \\ (81.3 \%) \end{gathered}$ | $\begin{gathered} 20 \\ (86.9 \%) \end{gathered}$ | $\begin{gathered} 12 \\ (30 \%) \end{gathered}$ |
| Negative correlation AEC | $\begin{gathered} 10 \\ (66.6 \%) \end{gathered}$ | $\begin{gathered} 8 \\ (33.3 \%) \end{gathered}$ | $\begin{gathered} 6 \\ (37.5 \%) \end{gathered}$ | $\begin{gathered} 10 \\ (43.5 \%) \end{gathered}$ | $\begin{gathered} 10 \\ \left(66.7 \frac{3}{3}\right) \end{gathered}$ |
| Completely wrong AEC | $\begin{gathered} 2 \\ (13.3 \%) \end{gathered}$ | $\begin{gathered} 1 \\ \left(4.2 \frac{q}{3}\right) \end{gathered}$ | $\begin{gathered} 1 \\ (6.3 \%) \end{gathered}$ | $\begin{gathered} 1 \\ (4.3 \%) \end{gathered}$ | $\begin{gathered} 2 \\ (13.3 \%) \end{gathered}$ |
| Totals | 15 | 24 | 16 | 23 | 15 |
| Percent of C-Group | 16.1\% | $25.8 \%$ | 17.2\% | 24.7우 | 16.1\% |

*The combination of two kinds of training means more than one workshop and/or institute.
awareness to what makes a reading passage difficult is reflected in these statistics.

Question 7: Does responsibility for materials selection affect a teacher's awareness of the established criteria in that a teacher is more likely to use them? Is the teacher with the responsibility for materials selection more likely to agree with readability perception as based on the established criteria? If so, how much?

Table 4 shows that of the 62 participants who had had material selection experience, 37 or 59.7 percent had a positive correlation with readability perception according to the established criteria whereas 12 or 38.7 percent of the 31 who had not had the experience or responsibility for materials selection showed a positive correlation.

The numbers and percentages of those who were all or partially correct do not show such a remarkable disparity. Fifty-two of the 52 of those experienced in materials selection ( 83.9 percent) were all or partially correct compared to 24 of the 31 ( 77.4 percent) of the non-experienced. Of course, teachers with more general teaching experience are more likely to have the responsibility for choosing texts. In fact, the first-year teacher who gets a chance to choose his own text book is probably unusual. The data have already shown that first-year teachers are not as aware of the established readability criteria as those with more experience. (See Table 3.)
Table 4
Correspondence Between Responsibility for Materials
Selection and Readability Perception

Question 8: Does language group taught affect the rating of each of the readability criteria?

Figures 4 through 6 show that the teachers of each language group did indeed have separately identifiable priorities for the readability criteria. (See Appendix D.)

The graphs are organized to show contrast between each language group and A-Group (all teaching participants) and also between each language group and A-Group without that language group included.

The S-Group agrees with the Non-S-Group in opinion of selection length, cultural differences, and affixes. Moderate differences occur with most of the others with the marked exceptions of the verb to be, human interest, illustrations, big words, and easy-to-sound-out words.

The F-Group was less affected by cultural difference, topic, human interest, selection length, illustration, big words, and words with high grapheme-morpheme correspondence. On the other hand, these teachers gave great importance to sentence structure and verb forms. They also considered the be verb occurrence to be of more relevance than other groups.

The $N$-Group seemed less concerned about sentence structure, topic, verb forms, and sentence length. Cultural differences were far more important to the teachers of Navajo than to the other teachers. Big words were far less important to them.

The P-Group (teachers to Papago-speakers) considered cultural differences and topic of topmost importance. Next in importance were vocabulary and sentence structure; in these two criteria they agreed with A-Group and Non-P-Group. They also agreed with the other teachers in their opinion of sentence length and number of concepts. They considered selection length much more relevant than the other groups.

Question 9: Does advanced degree training correlate with readability perception according to the established criteria? What difference does an M.A. in ESL make?

Table 5 shows that an M.A. in ESL degree greatly increases awareness of the formula elements. Whereas 74.1 percent of those with M.A. degrees showed positive correlation with the established criteria, only 27 percent of those without an M.A. did. Of those without advanced degrees, 70.3 percent were somewhat aware of what makes a reading difficult, whereas 92.6 percent of those with M.A.'s were all or partially correct. Only one person with an M.A. disagreed completely with readability as measured by the formulas. This teacher had been teaching beginning Spanish-speakers for six years. He has had materials selection responsibility.

The participant questionnaire asked whether the person had a Ph.D. There were seven such participants. It is interesting to note, though probably not truly significant, that a Ph.D. degree did not mean greater correlation with the readability criteria. Three of the seven Ph.D. participants agreed completely with the established criteria, and six were all or partially correct ( 85.7 percent). The

Table 5

Correspondence Between Advanced Degree Training and Readability Perception
[Question: How does an advancer degree (M.A. or Ph.D.) affect readability perception according to the established criteria (AEC)?]

|  | No <br> advanced degrees | Advanced degree | M.A. (not <br> including Ph.D.'s) | Ph.D. |
| :---: | :---: | :---: | :---: | :---: |
| Positive correlation AEC | $\begin{gathered} 10 \\ (278) \end{gathered}$ | $\begin{gathered} 23 \\ \left(67.9 \frac{2}{3}\right) \end{gathered}$ | $\begin{gathered} 20 \\ (74.18) \end{gathered}$ | 3 |
| All or partially correct AEC | $\begin{gathered} 26 \\ (70.3 \%) \end{gathered}$ | $\begin{gathered} 31 \\ (91.2 \%) \end{gathered}$ | $\begin{gathered} 25 \\ (92.6 \%) \end{gathered}$ | 6 |
| Negative correlation AEC | $\begin{gathered} 27 \\ (73 \%) \end{gathered}$ | $\begin{gathered} 11 \\ \left(32.1 \frac{\%}{3}\right) \end{gathered}$ | $\begin{gathered} 7 \\ \left(25.9 \frac{9}{3}\right) \end{gathered}$ | 4 |
| Completely wrong AEC | $\begin{gathered} 4 \\ \left(10.8 \frac{1}{5}\right) \end{gathered}$ | $\begin{gathered} 1 \\ (2.9 \%) \end{gathered}$ | $\begin{gathered} 1 \\ (3.7 \%) \end{gathered}$ | 0 |
| Totals | 37 | 34 | 27 | 7 |

Note: Some people did not indicate advanced degrees. It was assumed that they did not have them.

# latter figure is, however, somewhat misleading; it cannot be higher because there are only seven people in the category. 

Question 10: How do readability criteria of advanced degree participants compare to non-advanced degree participants?

The data for advanced degree participants and non-advanced degree participants are shown on Table 6. Since those with advanced degrees seem to be so much more aware of the importance of the established criteria, this information was deemed relevant. For purposes of this presentation of data, the lack of a mark in either the relevant or irrelevant column was interpreted to mean that the participant was neutral toward that criterion.

Vocabulary--People with advanced degrees considered vocabulary somewhat less relevant and more neutral than non-advanced degree people.

Topic--Those with advanced degrees considered topic less relevant and more neutral than those without advanced degrees.

Sentence length--Advanced degree holders considered sentence length more relevant and less irrelevant than those who did not have advanced degrees.

Sentence structure--Advanced degree teachers considered it in the same light as those without advanced degrees.

Cultural differences--People with advanced degrees considered them less relevant, more neutral, and more irrelevant than nonadvanced degree people.

Verb to be--Those with advanced degrees thought the number of occurrences of the verb to be was more relevant, less irrelevant, and as neutral. (The criterion did not spur many to comment on it.)

Table 6

Comparison of the Readability Criteria Ratings of Advanced Degree and Non-Advanced Degree Participants


Affixes--Advanced degree people considered affixes less relevant and somewhat more neutral than non-advanced degree people.

Human interest--People with advanced degrees consicered it less relevant and more irrelevant.

Number of concepts--Degrees appeared to have no effect on the rating of this criterion.

Easy-to-sound-out words--Advanced degree participants considered words with high grapheme-morpheme correspondence less relevant and twice as irrelevant as those without advanced degrees.

Print size--There was no identifiable trend in the ratings of this criterion.

Prepositional phrases--Those with advanced degrees were more likely to be neutral toward prepositional phrases and also to consider them less relevant.

Length of selection--Advanced degree holders considered selection length much less relevant than those without advanced degrees. The advanced degree participants showed a neutral response twice as often as those without advanced degrees.

Big words--People with advanced degrees considered the number of polysyllabic words less relevant and more neutral than non-advanced degree participants.

Illustrations--Those with advanced degrees thought that illustrations were much less relevant and much more irrelevant than non-advanced degree participants.

Verb forms--Verb forms were more relevant and much less irrelevant to people with advanced degrees than to those without them.

Question 11: Which criteria were cited most often? Which were considered irrelevant most often? which criteria elicited a neutral response most often?

Table 7A shows the ranking of the criteria as relevant.
Vocabulary and sentence structure were the two most of ten cited criteria with 77 percent of the participants marking them as relevant.

Cultural differences and topic were selected by 58 percent of the survey participants.

Sentence length ranked next in importance to the participants, followed closely by verb forms with 53 percent. Forty-seven percent indicated that the number of concepts was relevant. Selection length (38 percent), human interest (36 percent), big words (35 percent), and illustrations ( 34 percent) form the next grouping in rank. Easy words were considered relevant by 23 percent. Eighteen percent marked print size as relevant, 16 percent marked affixes and prepositional phrases, and 15 percent marked the verb to be.

Table $7 B$ breaks down the data according to the language group taught.

Eleven percent of the S-Group (Spanish) thought the verb to be an irrelevant part. (This is understandable as the Spanish be verbs are more complex than the English.) The verb to be was considered irrelevanc by 26 percent of all teaching participants (AGroup), by a third of the Navajo-teaching participants ( $N$-Group), and half (two) of the teachers of Papago speakers (P-Group).

## Table 7 <br> Ranking of Readability Criteria

［Question：How do the readability criteria rank in relevance？］
A：Criteria Noted as Relevant by Total Population Number of participants who marked it relevant

Percent of population

Sentence structure 57 $77 \%$

Cultural differences 43 $58 \%$

Topic 43 58\％

Sentence Length 40$54 \%$
Verb forms ..... 39 ..... 53\％
Number of concepts ..... 35 ..... $47 \%$
Selection length ..... 38 多
Human interest ..... 27 ..... $36 \%$
Big words ..... 26 ..... 35 \％
Illustrations ..... 25 ..... $34 \frac{9}{3}$
Easy－to－sound－out words ..... 17 ..... $23 \%$
Print size ..... 13 ..... 18\％
Affixes ..... 12 ..... 16名
Prepositional phrases ..... 12 ..... 16\％
Verb to be ..... 11 ..... 15号

```
Table 7, Continued
Ranking of Readability Criteria
```

| B: Criteria Noted as Relevant by Group |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Criteria | S-Group | F-Group | N-Group | P-Group * | A-Group |
| Verb to be | $\begin{aligned} & 11 \\ & 33 \% \end{aligned}$ |  | $\begin{gathered} 5 \\ 33 \% \end{gathered}$ | $\begin{gathered} 2 \\ 50 \% \end{gathered}$ | $\begin{aligned} & 19 \\ & 26 \% \end{aligned}$ |
| Verb forms |  |  |  | $\begin{gathered} 2 \\ 50 \% \end{gathered}$ | $\begin{aligned} & 10 \\ & 14 \% \end{aligned}$ |
| Prepositional phrases | $\begin{aligned} & 10 \\ & 30 \% \end{aligned}$ |  | $\begin{gathered} 5 \\ 33 \% \end{gathered}$ | $\begin{gathered} 2 \\ 50 \% \end{gathered}$ | $\begin{aligned} & 21 \\ & 28 \% \end{aligned}$ |
| Print size | $\begin{aligned} & 14 \\ & 42 \% \end{aligned}$ | $\begin{gathered} 6 \\ 39 \% \end{gathered}$ | $\begin{gathered} 5 \\ 33 \% \end{gathered}$ |  | $\begin{aligned} & 29 \\ & 39 \% \end{aligned}$ |
| Easy-to-soundout words |  | $\begin{gathered} 9 \\ 40 \% \end{gathered}$ |  |  | $\begin{aligned} & 19 \\ & 25 \% \end{aligned}$ |
| Affixes | $\begin{aligned} & 11 \\ & 33 \% \end{aligned}$ |  |  |  | $\begin{aligned} & 18 \\ & 24 \% \end{aligned}$ |
| Human interest |  | $\begin{gathered} 7 \\ 32 \% \end{gathered}$ |  |  | $\begin{aligned} & 13 \\ & 18 \% \end{aligned}$ |
| Selection length |  |  |  |  | $\begin{aligned} & 14 \\ & 19 \% \end{aligned}$ |
| Illustrations |  |  |  |  | $\begin{aligned} & 14 \\ & 19 \% \end{aligned}$ |

Items appearing within this table are considered pertinent to the study; others are omitted. Therefore, the table is not complete.
\#Furthermore, the P-Group selected no other criteria as irrelevant.

Table 7, Continueत<br>Ranking of Readability Criteria

[Question: Thich of the readability criteria were viewed the most neutral by the language groups' teachers?]

C: Criteria Noted as Neutral by Group

| Criteria | S-Group | F-Group | N-Group | P-Group | A-Group |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Verb to be | 20 | 14 | 8 | 2 | 44 |
|  | $50 \%$ | $64 \%$ | 53\% | 50\% | 59\% |
| Affixes | 17 | 15 | 8 | 4 | 44 |
|  | 51\% | 68\% | 53\% | 100\% | 59\% |
| Prepositional | 16 | 15 | 8 | 2 | 41 |
| phrases | 48\% | 68\% | 53 年 | 50 \% | 55\% |
| Big words | * | 13 | 11 | 2 | 38 |
|  |  | 59\% | 73\% | 50\% | 51\% |
| Illustrations | * | 13 | 8 | 3 | 35 |
|  |  | 59\% | 53\% | 75\% | 47\% |
| Selection length | * | 12 | * | 3 | * |
|  |  | 54\% |  | 75\% |  |
| Human interest | * | 11 | 8 | 3 | * |
|  |  | $50 \%$ | 53\% | 75\% |  |
| Easy-to-sound- | * | 11 | * | 4 | 38 |
| out words |  | 50\% |  | 100\% | 51\% |
| Print size | * | 11 | * | 3 | * |
|  |  | 50 号 |  | 75\% |  |
| Number of concepts | * | * | * | 2 | * |
|  |  |  |  | 50\% |  |
| Verb forms | * | * | * | 2 | * |
|  |  |  |  | 50\% |  |

*None below 47\% are reporter.

Verb forms were irrelevant to half of the P-Group and 14 percent of A-Group.

Prepositional phrases were irrelevant to 30 percent of S Group, 33 percent of $N-G r o u p, 50$ percent of $P$-Group, and 28 percent of A-Group.

Print size was irrelevant to 39 percent of all teaching participants (A-Group), 42 percent of the $S$-Group, 39 percent of the F-Group (teachers of foreign students), and 33 percent of the $N-G r o u p$ (teachers of Navajos).

Twenty-four percent of all teaching participants consider affixes irrelevant. Most of these teachers were in the S-Group which showed 33 percent marking affixes as irrelevant.

Eighteen percent of A-Group (all teaching participants) considered human interest irrelevant. Most of these participants teach foreign students as 32 percent of $F-G r o u p$ thought human interest to be irrelevant.

Selection length was irrelevant to 19 percent of all teaching participants. No one group had as much as 30 percent of it indicating selection length as irrelevant. Illustrations had exactly the same result.

Table 7 C shows the percentage of neutrality toward 11 of the readability criteria. Percentages below 47 percent are not reported; less than half of the participants were neutral toward them.

Both the verb to be and affixes were considered neutral by 59 percent of all teaching participants. Fifty-five percent were neutral about prepositional phrases. Fifty-one percent were neutral toward
big words and easy words. Illustrations were a neutral entity to 47 percent of $A$-Group. Table 7 C shows the breakdown of these figures. Selection length showed a neutral - esponse from 54 percent of F-Group and 75 percent of D-Group. Human interest showed a 50 percent neutral response from $F-$ Group, 53 percent from $N$-Group, and 75 percent from P-Group. Print size showed 50 percent neutral from $F$-Group and 75 percent from the teachers of Papagos. Fifty percent of P-Group was also neutral toward the number of concepts and verb forms.

## CHAPTER 5

## SUMMARY AND CONCLUSIONS

The data, in general, show a relationship between teacher assessment of readability and experience in teaching, between degree of teacher training and agreement with the established criteria.

Furthermore, the data indicate that those factors which are most pertinent to materials selection for native-speaking readers are the same for non-native speaking readers.

The following discussions of the formula-related criteria show the study's conclusions and implications for teachers, for textbook writers, and for further research.

1. The most obvious example of a formula-based criterion in ESL/bilingual materials selection is vocabulary. This criterion was one of the two most highly rated of all. Seventy-seven percent of all teaching participants considered vocabulary relevant. The two related criteria, the number of easy-to-sound-out words and the number of big words in a selection were considered less highly, probably because of the emphasis which survey participants placed on vocabulary in general.

The importance of vocabulary is recognized; however, the matter of which word list most nearly matches the basic vocabulary that an ESL/bilingual reader needs remains to be determined. The Thorndike-Lorge lists are useful, but somewhat out of date; behold
shows a frequency of more than fifty times per million on the Thorndike-Lorge list (Thorndike 1944, p. 17) with behold occurring only four times in the Kutera-Francis study (per million words) (Kucera-Francis 1957, p. 148). On the other hand, research occurs 22 times per million in the Thorndike-Lorge study (Thorndike 1944, p. 154) and 171 times per million words in the Kucera-Francis study (Kučera-Francis 1967, p. 6). The Kučera-Francis list, however, reflects a larger percentage of words of global importance such as public, government, system, business, president, social, national, power, development, service, history, political, office, major, federal, economic, society, areas, department, policy, military, secretary, and pressure, all of which occur within the first five hundred words of the Kưera-Francis list. (Research ranks as the 577th word.)

The matter of control in vocabulary, therefore, seems to indi-
cate a need for more research in this area. The need for vocabulary control has been emphasized by reading experts and by the teachers themselves, yet a word list reflecting modern needs and materials does not exist.

Table 8 shows an analysis of the 33 words in the readings not on the Dale List of 759 Easy Nords. (None of these words occurs on the Dolch list of basic sight words either.)

It seems that the matter of establishing vocabulary guidelines for the ESL/bilingual reader, especially for the beginning second language reader, is as yet unfinished. (See Appendix A for a more detailed look at vocabulary lists.)

Table 8

Vocabulary Analysis According to Kucera-Francis, Thorndike, the Dale 769, and the Dale 3000 Lists

| Words not on Dale 769 | Reading | K-F Rank* | $\begin{gathered} K-F \\ \left(x / 10^{6}\right) \end{gathered}$ | Thorndike $\left(x / 10^{6}\right)$ | Dale 3000 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| agree | PH | 2177 | 51 | 100+ |  |
| aid | FA | 789 | 130 | $50+$ |  |
| cabinet | FA | 5531 | 17 | 26 |  |
| certainly | PH | 702 | 143 | 100+ |  |
| decide | 2H | 2743 | 40 | 100+ |  |
| factory | EA | 3374 | 32 | $50+$ |  |
| float | FA | 18657 | 3 | $50+$ |  |
| Forest | PH | 1660 | 65 | 100+ |  |
| hike | PH | 15451 | 4 | 10 | \# |
| hungry | PH | 4340 | 23 | $50+$ |  |
| important | TN | 252 | 369 | 100+ |  |
| interesting | WN | 1321 | 82 | $50+$ |  |
| international | FA | 639 | 155 | 36 | \# |
| kit | FA | 24247 | 2 | 10 |  |
| medicine | FA | 3547 | 30 | 46 |  |
| nature | IN | 507 | 191 | 100+ | \# |
| oldest | PH | 6436 | 14 | 100+** | \# |
| orange | FA | 4349 | 23 | $50+$ |  |
| picnic | FA-DH | 6123 | 15 | 16 |  |
| plan | PH | 459 | 205 | 100+ |  |
| prepare | PH | 3123 | 35 | 100+ |  |
| replied | PH | 1955 | 57 | 100+** | 4 |
| sandwich | PH | 8199 | 10 | 23 |  |
| study | in | 380 | 246 | 100+ |  |
| supplies | FA | 2347 | 47 | 100+** | \# |
| tiny | PH | 6173 | 15 | $50+$ |  |
| unusual | rim | 608 | 163 | 36 | $\frac{4}{T}$ |
| vacation | EA | 2347 | 47 | 33 | \# |

Table 8, Continued

| Words not <br> on Dale 769 | Reading | K-F Rank* | $K-F$ <br> $\left(x / 10^{6}\right)$ | Thorndike <br> $\left(x / 10^{6}\right)$ | Dale 3000 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| voice | PH | 414 | 226 | $100+$ |  |
| waterproof | FA | 27955 | 1 | 5 |  |
| wet | FA | 2104 | 53 | $50+$ |  |
| youngest | DH | 6793 | 13 | $100+* *$ | $\#$ |
| special | FA | 374 | 250 | $100+$ |  |

*The Kukera-Francis List ranks the words according to frequency, from 1 to 50,406. For economy in data presentation, they lump some ranking numbers (e.g., rank 505-610 for unusual. On this table, the middle number of this group rank number is given, also for economy of presentation. Therefore, unusual appears to have a rank of 608 (Kučera-Francis 1967, pp. 300-307).
**Thorndike does not differentiate between base forms and -er, -est, and -ed. The list also scores frequencies above 100 together and those between 50 and 99 times per million together (100+ and 50+ respectively).
\#Not on the Dale 3000
2. The matters of sentence structure, sentence length, and number of concepts can be considered together. The longer the sentence, the more likely it is to have compound and/or complex structure, and the larger the number of concepts will be.

Although these three criteria showed high relevance in the data, not one teacher mentioned an important aspect--that consistency in sentence length, in relative difficulty in structure, and in vocabulary burden is more significant than the average of each of these.

Average sentence length can be lowered quickly with half a dozen three-word sentences, but such a maneuver does not simplify the reading. Also, as Hirsch points out, the relevant measure is clause length, not sentence length at all. Learning the devices which English uses to coordinate and subordinate clauses is a relatively easy part of reacing. The burden on the short-term memory is not as great for a fifteen-word sentence in which two clauses are combined as for a single fifteen-word clause (Hirsch 1977, p. 111).

Homogeneity in sentence length is a more accurate measure, particularly at the beginning level. If average sentence length for a beginning reading passage is six words, there should be no sentences longer than nine words ( 150 percent of the average sentence length).
3. The matters of cultural differences, topic, human interest, and selection length are even more important to textbook writers than to teachers. By allowing for discussion of cultural differences, by encouraging analysis of the values a reading espouses,
or focuses on, writers can foster a higher degree of critical thinking and a broader world view.

Textbook writers can also lower reading level by using the element of human interest. The writer can minimize the amount of unfamiliar matter by relating aspects of the world in terms of the people who live in a particular region and deal with a problem or adapt to conditions which are different from the experience of the reading audience.

Writers of textbooks can construct readings which nearly anyone can understand and learn from by using two principles: that the closest is the most familiar and that there are a large number of aspects of the world which are true for nearly everyone.

The matter of selection length is relatively simple: readings can be divided into digestible sections for purposes of presentation. Exercises related to each section can be used to divide the parts and assure comprehension of the main points along the way through the selection. The cliff-hanger tradition of many juvenile books is not generally appropriate. Because of the importance of closure, which both Taylor and Hirsch emphasize, writers might need to edit carefully so as to finish each of the sections with a modicum of completion.

The information which shows the advantages of familiar contexts for ESL readers suggests the Language Experience approach. In this approach, a teacher writes down the exact words of the student, thereby creating made-to-order materials (Thonis 1970, p. 45). Language-experience can also be used at a class level. As Paulo

Frelre found in teaching reading to Brazilian peasants, the reader needs to learn words with immediate relevance (Reimer 1972, p. 124).
4. The matter of verb forms is a largely uncharted area for readability formulas. As suggested in Chapter 1 , a general assessment of the complexity of verb forms in a passage can be made by counting has, have, been, and -ing or -ed verbs per one hundred word sample. The use of such a technique has yet to be formalized although the relative importance of verb forms is obviously recognized (and undoubtedly used in materials selection) by the most sophisticated (best trained) of the groups of participants--the teachers of foreign students.
5. The illustrations and print size affect the appearance of the book. These considerations were probably not given high values since few American teachers have ever had to use any really poor quality books, poorly printed and non-illustrated texts, for beginners.
6. The matter of affixes affecting reading difficulty was relatively unimportant to the participants. Actually the most common affixes (plurals and verb endings) probably make a reading easier for the ESL reader in that same way that other markers do, by marking a particular word or phrase for easy slot identification. A word with an -ed at the end is probably a verb.
7. The teacher participants did not place much value on prepositional phrases. There are two possible reasons for this. Perhaps the preposition itself signals the reader sufficiently clearly that the teachers do not gerceive the load on their own short-term
memories, and therefore they do not expect that their students would have any difficulty with prepositional phrases either-at least not in receiving them. Perhaps this means that expressing relationships through prepositional phrases is the best way to subordinate ideas for the beginning ESL reader. (See "The wonders of Nature" on pages 30-31 of this study.)
8. The frequency of the verb to be as a measure of reading difficulty was appreciated by 32 percent of the teachers of foreign students. Less than half that percentage of any other group agreed. Again the relatively high level of training which F-Group teachers have had might be the reason for their opinion.

Other Implications for Future Research
Clearly the most essential work is in defining basic word lists for $E S L$ and bilingual students.

The computer can be used in making these basic word lists.

Research into computer grading of sentence structure and verb complexity needs to be done. Computer analysis will probably work in this area too.

Because of the smallness of some of the groups in this study (especially the p-Group) further research needs to be done to make clear distinctions between the criteria in preparation for determining what all ESL teachers use to choose.

Perhaps a single ESL readability formula is possible. Work in constructing one depends on development of the ESL basic word list, on determining a better way of assessing structure other than average
sentence length, on figuring out a way to assess the topic and cultural content of a selection, and on teaching a computer to carry out all the functions of the formula.

## APPENDIX A

## FURTHER VOCABULARY ANALYSIS

The word lists show the most common words of English.

Ogden's list was prepared as a mini-language, a proposed international tongue.

The Dolch list includes the words which third-grade children should know on sight, without context clues.

The Dale List of 759 Easy words is made up of words which are common to Thorndike's first thousand most frequent words and the first thousand most frequent words known by children beginning school. It is, therefore, the list of words most likely to be known by all children and adults.

The Dale List of 3000 words shows those words which 30 percent of all fourth-grade children know.

Table 9 gives an analysis of the number of syllables per word on these four lists.

Table 10 shows the increasing use of suffixes as grade level increases.

Figure 3 shows the prepositions included in the four word lists. These probably comprise the most common ones in English.

## Table 9

Syllable Count Breakdown by word List

|  | Number of Syllables |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Total words | One | Two | Three | Four + |
| Dolch | 219 | $\begin{gathered} 193 \\ (88 \%) \end{gathered}$ | $\begin{gathered} 25 \\ (11.4 \%) \end{gathered}$ | $\begin{gathered} 1 \\ (0.45 \%) \end{gathered}$ | 0 |
| Dale 769 | 769 | $\begin{gathered} 584 \\ (76 \%) \end{gathered}$ | $\begin{gathered} 165 \\ (22 \%) \end{gathered}$ | $\begin{gathered} 18 \\ (2 \%) \end{gathered}$ | $\begin{gathered} 2 \\ (0.3 \%) \end{gathered}$ |
| Ogden's Basic | 846 | $\begin{gathered} 502 \\ (60 \%) \end{gathered}$ | $\begin{gathered} 245 \\ (29 \text { 号) } \end{gathered}$ | $\begin{gathered} 80 \\ \left(9 \frac{2}{5}\right) \end{gathered}$ | $\begin{gathered} 19 \\ (29) \end{gathered}$ |
| Dale 3000 | 3000 | $\begin{gathered} 1842 \\ (61.3 z) \end{gathered}$ | $\begin{gathered} 958 \\ (32 \%) \end{gathered}$ | $\begin{aligned} & 180 \\ & \left(5 \frac{9}{5}\right) \end{aligned}$ | $\begin{aligned} & 20 \\ & (0.7 \%) \end{aligned}$ |

The percentages of words of one syllable are high, illustrating the principle which underlies the Fry formula: that short words are indeed easier to read. It appears that short words are those most beginning readers need to learn.

Table 10
Affixes in the Nord Lists

| Affixes | Ogden $\left(74^{*}\right)$ | $\begin{gathered} \text { Dale } 769 \\ \left(5^{*}\right) \end{gathered}$ | $\begin{gathered} \text { Dolch } \\ \left(1^{*}\right) \end{gathered}$ | $\begin{gathered} \text { Dale } 3000 \\ (239 *) \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: |
| -ment | x |  |  | x |
| -en |  | x |  | x |
| $-n^{\prime} t$ |  | x | x | x |
| -er | x | x |  | x |
| -th | x | x |  | x |
| -tion, -sion | $x$ |  |  | x |
| -Y | X |  |  | x |
| -ed | x |  |  | x |
| -ing | x |  |  | x |
| -ish | X |  |  | x |
| -ward | x |  |  | x |
| -cal, -al | x |  |  |  |
| -ative | x |  |  |  |
| -ible, -able | x |  |  |  |
| -ful | x |  |  | x |
| -s |  |  |  | x |
| -1y |  |  |  | x |
| -ness |  |  |  | x |
| -less |  |  |  | x |
| - hood |  |  |  | x |
| -ous |  |  |  | x |
| -ence |  |  |  | x |
| -ern |  |  |  | x |
| -ity |  |  |  | x |
| -teen |  |  |  | x |
| -ship |  |  |  | x |
| -dom |  |  |  | x |

Table 10 , Continued
AffixesOgden Dale 769 Dolch Dale 3000(74*) (6*) (1*) (239*)
-ist ..... X
-wise ..... x
un- ..... x
*Total words with affixes

This table shows that the first 3000 words which a fourth grader has learned according to Dale contains many more suffixes than any of the others. It would seem that the learning of affixes is a third-fourth grade level task.


Figure 3. Prepositions Within the Word Lists

## APPENDIX B

THE FRY READABILITY GRAPH

## Readability Variation



DIRECTIONS: Randomly select three one hundred word passages from a book or an article. Plot average number of syllables and average number of words per sentence on graph to determine area of readability level. Choose more passages per book if great variability is observed.

Special considerations:

- Count numbers, for example 274, 1976, as one syllable unless
they are written out with vowels and consonants.
- Count hyphenated words as one word.
- A sentence continuing a semi-colon (i) or colon (:) is
counted as one sentence.
- Add one year (one grade-level) to the result if the material was transplanted from another language or was written before 1900. From Edward Fry, "A Readability Formula That Saves Time," Journal of Reading, Vol. Il, No. 7 (April, 1968), DD. 513-516 ff.


## APPENDIX C

ESL MATERIALS SELECTION PACKET

Teacher's Questionnaire--Participant Information Sheet

Please fill in all parts of this questionnaire. Blanks left empty might invalidate the study. Dlease write NA in any blank if the question does not apply to you.

Name $\qquad$
Address $\qquad$

City $\qquad$ State $\qquad$ Zip Code $\qquad$

Are you a teacher? $\qquad$ Are you an administrator? $\qquad$ Are you a student? $\qquad$
Are you presently engaged in teaching an ESL or a bilingual education program? $\qquad$ (If not, have you ever been? $\qquad$ How long ago?
$\qquad$ For how long then? $\qquad$ Do you now teach a class of beginners? (If not, have you ever? $\qquad$ How long then? $\qquad$ Do you now teach an intermediate group? $\qquad$ (If not, have you ever? $\qquad$ How long then? $\qquad$ )

Do you now teach an arivanced group? $\qquad$ (if not, have you ever?

How long then? $\qquad$
Which of the following language groups have you taught? Circle all relevant ones: Spanish speakers Navajo speakers Papago speakers Foreign students Other $\qquad$

Have you received any special training for ESL or bilingual education? If so, please describe: (degrees, workshops, institutes, etc.)

Has the selection of classroom materials ever been your responsibility? $\qquad$ Conment (if you wish):

How long have you been involved in ESL or bilingual education? Circle one: first year fewer than five years more than five years Additional information about yourself which you think would clarify any of the answers given here:

The Readings
Please read through these three selections. Consider them as possible readings for an ESL-bilingual program student.

After reading them, please write Hardest in the blank space after the one which you think that a second-language student would find most difficult, and write Easiest in the blank after the one which you think would be the least challenging for him.

There are no right or wrong answers. This is a matter of teacher opinion. Your answers will help determine the relevant criteria for text selection.

Planning a Hike
One afternoon the youngest three children of the Smith family decided to go on a long hike in the forest. The oldest
child, Ann, made plans for the next morning. "Mother," she asked, "would you take us to Hamilton Park early in the morning so we can get a goon start on our hike?"
"Sure, I'd be happy to," her mother replied in an un-sure voice.
"And will you prepare a picnic with lots of sandwiches and apples?" asked Billy who was very round and always hungry.
"Certainly. I'd be happy to," his mother agreed.
"nommy," asked tiny Sandy in her tiny voice, "will you come with us too?"
"Of course," Mrs. Smith said, "I'd be glad to."
In fact, it seemed as if she felt good about the hike at last.

The First Aid Kit

A first aid kit is a box with first aid supplies. There are several kinds of kits.

A family first aid kit travels with them. They take it on picnics and vacations. They keep another one at home in the medicine cabinet and yet another in the car.

There are special kits for boats. Boat first aid kits are usually orange. Orange is the international color for emergencies. These kits also float. They are waterproof. Water cannot get into them and wet the supplies.

Offices and factories also need first aid kits. Many accidents happen at work.

## The Wonders of Nature

Our worla is interesting. Many parts of it are unusual. There are many things to study.

Ne study nature. Nature is plants and animals. Nature is weather. Nature is everything on Earth.

Plants are large and small. Some are too small to see. Some are very large. Some plants have leaves. Some do not have leaves at all. Most plants are green. Some are not. plants are interesting to learn about.

There are many kinds of animals too. There are animals of all sizes. Animals are interesting to study.

Weather is an important part of nature. Our lives change with weather. Weather affects everyone. Farmers worry about sun and rain. Storms destroy homes and fields.

Land, water, and air together hold all of nature. Each part of nature is different. There are many wonders to learn about.

```
The Criteria
    Please read through this entire list of suggested criteria for
judging the difficulty of a reading selection for a student in an ESL
class or a bilingual program. (The list is on the following page.)
```

| Vocabulary |  |  |
| :--- | :--- | :--- |
| Topic, theme, subject |  |  |
| Sentence length |  |  |
| Sentence structure (simple or complex clauses) |  |  |
| Cultural differences |  |  |
| Frequency of the verb to be |  |  |
| Number of prefixes and suffixes |  |  |
| Human interest |  |  |
| Number of concepts |  |  |
| Easy-to-sound-out words |  |  |
| Size of print |  |  |
| Length of the piece of writing |  |  |
| Number of syllables (big words) |  |  |
| Appropriate illustrations |  |  |
| Complexity of verb sorms |  |  |
| Now, please check what you consider most important here |  |  |
| (Check five or so as the most important.) |  |  |
| atease do not change your assessment of the three reading selections |  |  |

Are there any other criteria you used in assessing the three readings? Please write them here:

Do you use any other criteria while assessing your classroom materials? Please write them here:

## APPENDIX D

## COMPARISON OF CRITERIA RELEVANCE

BY LANGUAGE GROUP TAUGHT


#### Abstract

The figures in this final appendix show the relative weight which each of the readability criteria were given by each languageteaching group. Each page shows three graphs: the focus group, the group of all teaching participants, and all the teaching group without the focus group. Figure 4 shows all the graphs at once.


## PLEASE NOTE:

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1. Glossy photographs $\qquad$
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7. Tightly bound copy with print lost in spine $\qquad$
8. Computer printout pages with indistinct print $\qquad$
9. Page (s) $\qquad$ lacking when material received, and not available from school or author $\qquad$
10. Page (s) $\qquad$ seem to be missing in numbering only as text follows $\qquad$
$\qquad$
11. Poor carbon copy $\qquad$
12. Not original copy, several pages with blurred type $\qquad$
13. Appendix pages are poor copy $\qquad$
14. Original copy with light type $\qquad$
15. Curling and wrinkled pages $\qquad$
16. Other $\qquad$
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Figure 4. Comparison of Criteria Relevance by Language Group Taught (All Groups)


Figure 5. Comparison of Criteria Relevance by Language Group Taught (Focus: P-Group)


Figure 6. Comparison of Criteria Relevance by Language Group Taught (Focus: N-Group)



Figure 7. Comparison of Criteria Relevance by Language Group Taught (Focus: S-Group)


| Vocabulary |
| :--- |
| Sentence Structure |
| Cultural Difterences |
| Topic |
| Sentence length |
| Humber of Concepts |
| Human Intertest |
| Selection tength |
| Vert Forms |
| Illustrations |
| Hig Words |
| Easy Words |
| Print size |
| Atfixes |

Figure 8. Comparison of Criteria Relevance by Language Group Taught (Focus: F-Group)

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