DOCUMENT RESUME

ED 263 620 CS 209 461

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TITLE Readability: Conceptions and Misconceptions.
INSTITUTION National Council of Teachers of English, Urbana, Ill.
PUB DATE Aug 81
NOTE 4p.; SLATE (Support for the Learning and Teaching of English) Starter Sheet, a publication of the NCTE/SLATE Steering Committee on Social and Political Concerns.
PUB TYPE Collected Works - Serials (022) -- Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Content Analysis; Difficulty Level; Educational Trends; Elementary Secondary Education; *Evaluation Criteria; Measurement Techniques; *Readability; *Readability Formulas; *Reading Comprehension; Reading Materials; *Textbook Evaluation

ABSTRACT

One of a series dealing with current issues affecting language arts instruction, this paper focuses on the conceptions and misconceptions of readability. The paper begins by noting that over the years, researchers in readability have had two major goals: to determine what makes written materials easy or difficult to read and comprehend, and to effect an optimal match between readers and texts. This is followed by a discussion of some of the factors, such as sentence length and vocabulary, that make texts easy or hard to read and understand. The various applications of readability formulas are then examined, with some discussion given to the misconceptions of their use. The paper concludes by noting that scores from readability formulas are no more substitutes for judgment than are scores from reading tests: in both cases, interpretation on the basis of particular conditions is required. (HOD)

Starter Sheet

August 1981

SLATE Support for the Learning and Teaching of English

READABILITY: CONCEPTIONS AND MISCONCEPTIONS

Over the years, researchers in readability have had two major goals. to determine what makes written materials easy or difficult to read and comprehend, and to effect an optimal match between readers and texts.

The most widely used outcomes of such research are the readability formulas. More than fifty have been developed to date, but only a few are in wide use–Spache, Dale-Chall, Flesch, and Fry. Such formulas are best viewed as tests of reading materials, similar to the standardized reading achievement tests for students. A readability formula, when applied appropriately to printed text, gives a level or score. This score may be related to the reading level or score a student makes on an appropriate standardized reading test.

What Makes Text Easy or Hard to Read and Understand?

Since the early 1920s, readability research has uncovered more than one hundred factors related to comprehension difficulty–aspects of words, sentences, ideas, organization, and appeal. Of these, the two factors most strongly associated with reading comprehension are vocabulary and sentence length, that is, aspects of semantics and syntax. And these two factors are included in most of the currently used readability formulas. The stronger factor is vocabulary difficulty–measured either by a count of unfamiliar words, hard words, words of low frequency, or long words. All word measures are highly interrelated. Once a vocabulary factor is used in a formula, another factor adds little to the prediction. The second most predictive factor is sentence length, which is very highly related to other measures of syntax and also to word difficulty, consequently, only one sentence factor is usually used in a formula. A vocabulary and a sentence factor together predict comprehension difficulty of written text to a high degree of accuracy. the multiple correlations run from about .7 to .9, as high as those between two reading comprehension tests.

In spite of the generally high prediction of readability formulas, researchers have cautioned that what makes text difficult or easy to comprehend is more than just the vocabulary and sentence factors. A broader concept of readability would embrace such factors as conceptual difficulties not fully accounted for by vocabulary measures (particularly when difficult ideas are presented in familiar, short words, as in a metaphor), organization of paragraphs and entire texts, difficulty and density of ideas, illustrations and other graphic features, and, perhaps most significantly, the knowledge and interests that readers bring to the text. The research literature has cautioned users of formulas to judge such additional factors for the sake of approaching a comprehensive conception of readability as "the sum total (including the interactions) of all those elements within a given piece of printed material that affects the success a group of teachers have with it. The success is the extent to which they understand it, read it at an optimum speed and find it interesting" (Dale, E., and Chall, J.S., "The Concept of Readability." *Elementary English*, 1949, *26*, 19-26).

Uses of Readability Formulas

Formulas appear easy to apply, but care is required for proper use and interpretation. One might make an analogy with reading tests. The best standardized reading achievement tests can be disappointing when administered to students for whom they were not standardized, or when the results are not interpreted properly.

Similarly, readability formulas can give disappointing results. It is often noted that readability scores obtained for the same books by two independent analysts are not always the same, even when the same formula is used. This is because formulas test only samples of text, and if the samples taken are not representative or are too few, scores from the same formula may vary. When the samples taken are sufficient, two analysts using the same formula will usually get substantially the same score for a given book. If two different formulas are both used appropriately on the same book, the scores obtained may differ appreciably; even so, both formulas may still yield the same rating of *relative* difficulty for that particular book.

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Moreover, some users do not follow the formula instructions given by the authors. They may erroneously use the formula on a book below or above the difficulty range on which the formula was standardized. Or users may modify the rules, which is a questionable practice unless the results are for only private use. Where used for general educational purposes, authors' standard procedures should not be "bent," just as one would not change the key or scoring system on a standardized reading test to suit one's purposes without acknowledging such modifications.

In the business of publishing textbooks, there is mounting pressure for publishers to submit evidence of suitable readability, thus, textbook adoption committees may be contributing to what has been called a "readability numbers game." Accordingly, publishers may feel obliged to compete for a best score, even though it may not be clear what a best score is. Some textbook adoption committees seem to believe, as do some publishers and teachers, that the lower the readability score for a grade level, the better. Recent research in our laboratory would call this assumption into question. A comparison of the difficulty levels of the most widely used textbooks with SAT verbal scores showed that the textbooks generally decreased in difficulty over a thirty-year period (with the exception of elementary reading textbooks, which became more challenging during the middle 1960s). Comparison also showed that the decline of difficulty in textbooks was associated with declining SAT verbal scores (Chall, Conrad, Harris, 1977 [SAT]).

Readability formulas do not determine how easy or hard the materials should be for a class, a group, or an individual, instead, they give only estimates of how difficult the materials probably are. Whether the readability levels are good or poor for the students in question depends on the reading ability of those who will use the materials, the extent of their previous knowledge, how much help the teacher gives, the nature of the ideas in the text, and other variables. Significantly, there are no established and generally accepted standards for the optimal growth and development of reading and language abilities. Nor probably will there ever be, although there is general consensus that books should be more difficult to read in accordance with the sequence of grade levels. We simply do not know enough about how steep or gradual the increases should be, at least for the sake of textual difficulty of textbooks produced for national use. If a textbook adoption committee selects material that is on or below students' tested reading level, students may not fully develop their reading and language abilities from a lack of challenge. Similarly, if the gap between the readability of the textbook and the reading achievement of the student is too great, development may also be less than optimal. Indeed, since vocabulary is the most important factor in reading comprehension as well as in the prediction of readability, it would appear that to develop in reading comprehension the student must be exposed to materials at increasingly higher readability levels.

One popular misconception is that, because of readability formulas, publishers are watering down their textbooks, creating artificial language because certain words on the graded word lists cannot be used. In fact, no word list nor any formula tells authors and publishers which words should not be used. Guides that exist are based on usage only at the time the guides were developed, and so change with time; in no sense were they devised to "dictate" the vocabulary to be used in instructional materials for the different grades.

Another misconception, venerable but increasingly popular, is that readability formulas do not measure all of readability. Researchers in readability have consistently acknowledged what truth lies in this allegation and have cautioned users that readability scores must always be assessed on the basis of particular conditions. At best, readability formulas give only predictions of readability. The ultimate test of difficulty is a tryout or field test with readers for whom the material is intended.

Still another persistent misconception is that formulas can be used on any text. Actually, each formula can be used only for testing the kinds of materials on which it was standardized. For example, none of the widely used formulas can be appropriately used for highly mathematical material or for poetry or highly figurative prose.

One of the growing concerns, also discussed in the early research literature, is that readability formulas alone are not adequate as guides for writing or rewriting. Although hard words and long sentences generally characterize more difficult text, the substitution of easier words and shorter sentences may result in text that has a lower score but is in fact less readable. Indeed, the poor writing in some instructional materials suggests that such attempts to lower readability scores may be quite common. There is considerable evidence, however, that less mechanical uses of readability research, in which revisions are based not only on words and sentences but on reorganization and appeal of the text, result in improved comprehension as well as in lowered readability scores (Chall, 1958).

Current Trends and Future Developments

One of the current trends in readability has been the simplification of readability measurement, accomplished through use of graphs, tables, computers, and readability scales. Another is the renewed search for the qualitative, conceptual, and organizational aspects of comprehension difficulty. Among the promising trends are analyses of propositions by Kintsch and Vipond (in press) and the analysis of cohesion by Halliday and Hasan (1976).

A Special Note for Teachers of English

Generally speaking, narrative writing, according to readability research, is easier to read and comprehend than is expository writing. That is, fiction is usually easier to read than nonfiction. Research has shown that best-selling adult novels tend to score at an eighth grade readability level and that the most difficult selections in an eleventh grade literature anthology selections taken from adult literature average about a ninth to tenth grade level.

Above the elementary grades, the qualities that make literature difficult to comprehend are somewhat different from the sources of difficulty in textbooks. For literature, the difficulties seem to lie more in factors not yet reliably

tested–the nuances of the ideas, the concept load, use of metaphor with simple vocabulary, etc.; in contrast, the reading difficulty with textbooks lies in the complexity of concepts and in technical and special vocabularies (Chall et al., in press).

Of greatest importance for English teachers, and particulary for elementary language arts teachers, is the fact that grade level scores of readability formulas generally refer to *reading* comprehension, not *listening* comprehension. In the early grades, most children's listening comprehension is well above their reading comprehension. Thus, readability scores of books read *to* young children can and should be higher than those of books they themselves can read. For most junior and senior high school students, readability grade level estimates tend to be similar for listening and reading comprehension. Other factors being equal, formulas are as useful for placing stories in an order of linguistic difficulty for listening comprehension as they are in placing them for reading comprehension.

Summary

Readability formulas can best be understood as tests of reading materials, similar to standardized tests of students' reading achievement. For best use, both readability formulas and reading tests need to be understood for what they are, how they were developed, and what they can and cannot do. Like standardized reading tests, readability formulas measure only some–although perhaps the most important–factors of reading difficulty. Scores from readability formulas are no more substitutes for judgment than are scores from reading tests; in both cases, interpretation on the basis of particular conditions is required.

Should the measurement of readability by formula be dismissed because it has not yet overcome limitations and hazards? By no means. Measures of readability require an objective index, and readability formulas are most useful tools for the important task of measuring the difficulty of instructional materials. Indeed, readability scores, when tempered with judgment, predict the comprehension difficulty of text remarkably well.

–Jeanne S. Chall

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The above report is based on a forthcoming book, *Readability*, by Edgar Dale and Jeanne S. Chall to be published by McGraw-Hill. It will contain the newly-revised Dale-Chall Readability Formula.