Assessing Reading Skills in the Content Area

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Assessment of students' abilities to read and learn from assigned textbooks is an essential element in the design of effective instruction and achievement in subject area classrooms. Because the use of text material represents the most widely used vehicle for instruction in schools across the country, it is useful for teachers to know how students can be expected to interact with and perform in specific subject matter materials in order to make appropriate instructional decisions. This chapter outlines a number of interest survey procedures that are recommended for assessing reading and learning expectations, prior knowledge, and preferences of students in a variety of subject areas. In addition, several other assessment strategies are presented which represent alternative approaches deemed to be potentially useful for content teachers and reflective of new knowledge in cognition and reading comprehension. Two standard procedures, the group reading inventory and cloze inventory are particularly appropriate for use during the first few class meetings and perhaps later, as a follow-up during the spring of the same school year. Three other techniques such as checklists, interviews, and portfolios are more useful when used throughout the year as components or supplements in an ongoing evaluation plan used in a content area classroom.

A Need for Informal Diagnosis in the Content Areas

It would not be unusual to find a range of reading ability among students that may vary as many as six to eight grade levels in some classrooms. Such a range of achievement can present a difficult problem for teachers who use one basic textbook. This problem is often compounded by the use of material written on a vocabulary, concept, and readability level several years above the grad level in which they are being used. In addition to high readability levels, most textbooks are written in an expository style. This type of reading is not only more difficult for many students, but it is usually less interesting to read than material written in a narrative style. Most youngsters learn to read using a combination of narrative type readers and trade books. Beginning in the middle grades a transition from basal reader and trade book materials to expository style, content textbook reading is usually assumed; however, students' abilities to transfer those reading skills learned and practiced in basal materials cannot be assumed, and indeed, is often a factor related to a lack of achievement.

In the past, middle and upper grade teachers have been primarily trained and assigned to teach content and have not felt they had either the time or the knowledge to diagnose and teach the reading and study skills required by their subject areas. Beginning in the 1960s, reading authorities began to note that content teachers were the most logical teachers of those knowledges required in their subject areas and to recommend informal

assessment techniques that could be administered quickly, efficiently and without extensive training in reading. There was growing demand also during the 1970's and 80's for demonstrated competency and accountability that led to increased emphasis on formal, achievement testing. Formal tests, by their very nature, however, require the need for external scoring, delayed reporting of results and—for classroom impact—the need for curricular alterations to "match" the perceived weaknesses found by the tests.

Many formal testing programs are designed to provide a gross effectiveness index rather than specific information about student strengths and weaknesses. The formal tests that do offer individual profiles are not, in most cases, tied directly to the books or other instructional programs currently used in a given classroom. Research reveals also that other factors such as time limits, test formats, and a lack of test wiseness enter into the performance of students on these tests (Wheldall & Madelaine, 2000). Thus, informal assessment approaches that more closely reflect typical classroom activity have continued to be the most useful means of identifying student strengths and weaknesses and for measuring growth and achievement of specific content area objectives.

The most widely accepted principles of assessment are that the procedures and instruments must be content specific, easily constructed and scored, group administered, and representative of the type of reading skills that student would be expected to use in their science, history, or other subject area classes. Informal test procedures such as those discussed here are not intended to replace formal testing but, instead, to provide direction for further teaching considerations. For these purposes, a description of three types of instruments is provided for use in content area materials. Each of the three types of procedures may be adapted for use in middle through high school level classes.

Surveying Content Area Reading Interests

Background Knowledge and Reader Interest

Perhaps more intuitively than research based, reading specialists and classroom teachers believe reader interest is vital to maintain comprehension of nearly any written material (Hughes-Hassell & Lutz 2005). Interest, attitude, and prior knowledge are identified as being important factors contributing to variability on reading tasks and thus should be considered in the process of discovering the conditions under which a student will succeed in reading. For interest surveys to be helpful, we must be able to assume that the information obtained is reasonably accurate. For this reason it is suggested that interest surveys be administered in an untimed and relatively brief format of no more than one or two pages in length. Teachers should keep in mind that the purpose of such surveys is to gain some indication of reader interest and/or knowledge about a particular subject in order that it can be integrated into teaching, rather than merely collecting the information for description of students' status as readers (Brozo, 1990). Examples and suggestions for six different interest survey formats are recommended beginning with an open-ended, projective style.

Content interest inventories are generally designed in four types: An open-ended projective type; a more structured, paired choice type; summated, or agree/disagree; and, semantic differential type. Teachers may prefer to combine several of these response formats in one instrument. Projective instruments usually take less time to construct, but require more time to score and interpret responses. Five to ten statements may be used to

elicit responses. The following examples are representative of the type of open-ended items that are appropriate for use on a history interest inventory.

1. Three famous leaders from earlier days whom I know about are:
2. The time period that I know most about in our nation's history is:
3. In the past my history classes have been:
4. If I could travel back in time, the period I would most like to return to is:

Variations of the above type of invited response can be more directed by providing the student with options from which to choose or rank. Teachers can design these types of surveys to reveal areas of interest, previous background and experience, and learning styles or preferences. Examples of this, more specific type of response, are presented below:

1. Listed below are several areas of study of science. Indicate your preferences for study in these areas by placing the number 1 by the topic you would most prefer to study, 2 by the next most preferred topic, etc.

_____plants	_____rocks	_____ecology
_____weather	_____chemistry	_____energy (etc.)
_____land forms	_____astronomy	_____animals

2. Indicate with a check mark which of the topics below you have studied in the past or have some knowledge about:

_____plants	_____rocks	_____ecology
_____weather	_____chemistry	_____energy (etc.)
_____land forms	_____astronomy	_____animals

3. Choose the one place you would most like to take a field trip:

_____planetarium	_____zoo hospital	_____laboratory
_____weather station	_____aquarium	_____space center
_____earthquake area	_____museum	_____agricultural center

A second type of assessment, paired choices, requires students to choose between items.

1. Listed below are several pairs of activities. Look at the pairs, one at a time, and place a check mark in the blank before the activity you would find most interesting of the two.

____	read a book about a famous scientist	____	draw diagrams of atomic structures	____	watch a film of a demonstration		make a bulletin about a famous scientist
____	do library research on a scientific accomplishment	____	attend a lecture on a scientific accomplishment	____	put together models of atomic structures	____	do a scientific demonstration

Although the use of paired choices is more structured and easier to quantify, the choices may not actually reflect student interests because respondents may either like or dislike both choices.

The summated items approach requires students to agree or disagree with a statement. For example:

1. Science is my favorite subject.
   a. Strongly agree
   b. Disagree
   c. Agree
   d. Strongly disagree

2. I prefer doing “labs” and writing up my findings than reading a chapter and having a class discussion about it.
   a. Strongly agree
   b. Agree
   c. Disagree
   d. Strongly disagree

3. I usually do well in science classes.
   a. Strongly agree
   b. Agree
   c. Disagree
   d. Strongly disagree

The semantic differential technique involves a set of bipolar adjectives and a five, seven, or ten point scale as a means of establishing attitudes and interests. The following is an example of this type of structure:

1. English class is

   Important _____ _____ _____ _____ _____ Unimportant

   Interesting _____ _____ _____ _____ _____ Boring

Interest surveys may also be constructed using the current textbook or a previous text for reference points. For example, teachers can list from the table of contents, the topics to be studied during the year and ask the students to rank the topics in order of their interest by choosing the five most interesting and the five least interesting topics.

When used for early semester data gathering, teachers can sometimes recognize details about how students feel toward the subject area and, to some extent, how much students know about the subject. Information from interest inventories should be summarized on a whole-class basis as well as reviewed for individual student comments. Students are often very honest and, perhaps, painfully direct about their feelings toward certain academic subjects. Without a survey of some type, however, teachers may never know the extent of interest—or disinterest—that students have about their studies and cannot use the information to meet the responsibility of helping students make a positive attempt to learn the subject matter.

Using a Group Reading Inventory

Group reading inventories (GRI) are useful for obtaining information about how well students can read printed materials and for isolating specific textbook handling and comprehension difficulties. Administered in two parts, a GRI is a group test constructed from textbook or other printed material that students have not previously read. These materials should be the same materials that will be used in the class throughout the academic year. Part one of the test is used to measure a reader's ability to use book parts, illustrative material, and reference skills (See Figure 1). Part two of a GRI is designed to measure a reader's ability to answer comprehension questions after reading a portion from a textbook.

Instructions for construction of a GRI follow.

Part One—Using Book Parts

Using the adopted textbook or other printed materials for the class, construct eight to twelve questions that requite a knowledge of book parts and understanding of the illustrative material that may appear in the specific material being used. Part one of figure one contains examples of questions for this section of a group reading inventory.

While a multiple-choice format is used in the sample, questions such as these may be presented by having students look up their answers in their own material and fill-in the appropriate response. Using this format, questions such as the following would be appropriate: "On what page would you find information about our sixteenth president?"

“What does the dotted line on the chart on page 72 represent?” “On what page does chapter six begin?”

Part Two—Silent Reading

1. Choose a passage of approximately 500 words from the first section of the material that the class will be using. The passage should be material not previously read and should be complete in overall concept or story theme.
2. Count the total number of words in the passage and write that number down.
3. Develop from 12 to 15 comprehension questions covering the material to be read in the book. Questions should be designed to require the reader to respond to main idea, factual, vocabulary, and inferential type questions. These questions may be either open-ended or multiple-choice format. Table 9.1 contains examples of a book parts test and a sample student answer sheet.
4. Prepare an answer sheet that includes all original questions and possible answers. Label the type of skill each question is intended to measure and note page and paragraph references for later discussion with the class. See Table 9.2 for a sample answer sheet.
5. Develop a summary chart to record class performance.

Table 9.1.

Part I: Using Book Parts

Introduction: These questions are designed to help you understand the organization of your text and to enable you to use it more effectively. You may use your text in answering the questions.

1. Where would you look to locate a chapter on cells in the text?
   a) Glossary
   b) Table of Contents
   c) Literary Terms and Techniques
   d) Index of Authors and Titles

2. If you came across the word "velocity" in your reading in the text, where would you look first for a definition?
   a) Table of Contents
   b) Literary Terms and Techniques
   c) Glossary
   d) Dictionary

3. The study and discussion questions for most of the information in the text are found:
   a) in the Table of Contents
   b) after each chapter
   c) in a separate section at the end of the book
   d) immediately before each selection

(Continue with several additional questions which will provide information about whether or not students are aware of and know how to use the unique features of the assigned textbook. Questions may be open-ended or multiple choice.)

Part II: Group Reading Inventory—English

Introduction: Read the selection beginning on page through page to find out how the early novel developed and the various forms it took. When you have finished reading the selection, raise your hand and you will be given a short questionnaire over the material.

The Novel

One of the nicest pleasures in life for many people is to curl up in a comfortable place and read a good novel. Novels have been in existence for a relatively short time, compared to other forms of literature. For example, the drama has existed for centuries, whereas the novel came into being only about three hundred years ago. Basically, a novel can be defined as a long story, written in prose, and having many characters and more than one plot.

Prior to the development of the novel in its present form, stories were often written in verse. These verse stories were known as “romances” during the Middle Ages. Usually the stories involved around characters such as kings, queens, knights-in-armor, and other heroes. Rarely were ordinary people and their problems ever subjects for romances—they were considered unfit subject matter for literature.

During the Renaissance, dating between the fourteenth and sixteenth centuries, people began to see that ordinary people and their lives could be interesting and meaningful subjects for stories, often changing their point of view about life and literature.

Among these important changes were the geographical expansions of many countries... (etc.)

Comprehension Questions

The Novel

1. What is a novel?
2. What was the “picaresque” novel?
3. Approximately when did the novel come into being?
4. What is a “plot” novel?
5. How did the invention of the printing press affect literature?
6. What are “romances?
7. How does the “plot” novel differ from the “adventure” novel?
8. If our society were only composed of the very rich and the very poor, with no middle class, what type(s) of novel(s) might we have today?
9. How did exploration affect the merchants?
10. What type of modern literature do you think may have been an outgrowth of space exploration?
11. What are two examples of “adventure” or “journey” novels in English or American literature?
12. How might the mass media (television, newspapers, etc.) negatively affect the novel today?
13. Why did the novel develop the way it did?
14. What social topics might be found in modern novels today?

Table 9.2

Example of a GRI Answer Key

Skill	Question and Possible Answers
Main Idea	1. What is a novel? (long, prose story with many characters and more than one plot) (Paragraph 1)
Context	2. What was the "picaresque" novel? (stories of adventures of rogues or rascals who traveled about the country; from the Spanish word picaro meaning rascal.) (Paragraph 5)
Detail	3. Approximately when did the novel come into being? (during the Renaissance; between fourteenth and sixteenth centuries) (Paragraph 3)
Context	4. What is a "plot" novel? (stories of love between people, set in only one place and having few characters)
Detail	5. How did invention of the printing press affect literature? (large quantities of books available at reasonable cost)
Context	6. What are "romances?" (stories written in verse usually about kings, queens, knights, or other heroes)
Detail	7. How does the "plot" novel differ from the "adventure" novel? ("plot" novels are usually set in one place and have fewer characters)
Inference	8. If our society were only composed of the very rich and the very poor, with no middle class, what type(s) of novel(s) might we have today? (answers will vary).
Detail	9. How did exploration affect the merchants? (gave them more markets in which to sell products)
Inference	10. What type of modern literature do you think may have been an outgrowth of space exploration? (science fiction)
Detail	11. What are two examples of "adventure" or "journey" novels in English or American literature? (David Copperfield, Oliver Twist, Huckleberry Finn, Robinson Crusoe, or Joseph Andrews).
Inference	12. How might the mass media (television, newspapers etc.) negatively affect the novel today? (answers will vary)
Main Idea	13. What did the novel develop the way it did? (people were becoming more practical and realistic; discovered the "ordinary" could make good stories (answers will vary)
Inference	14. What social topics might be found in modern novels today? (answers will vary)

Performance Levels

INDEPENDENT	0-2 questions missed
INSTRUCTIONAL	3-5 questions missed
FRUSTRATION	6 or more questions missed

Total Number of Words in Passage _____
_

Instructions for administering and scoring a GRI are as follows:

1. Explain the purpose of the inventory and inform the class members that they will be expected to answer questions without rereading the material.
2. For Part one of the test, ask students to use their text to answer the questions. Observe the class and note those readers who exhibit difficulties locating the information.
3. For Part two of the test, ask students to open their texts or scroll to the designated reading selection and briefly introduce the material by orally providing a one or two sentence statement explaining what the passage will be about.
4. As an optional procedure, some teachers may wish to obtain some measure of reading rate. To do so a teacher should ask the students to read the material silently and, when they have finished, write down the time spent reading (in minutes and seconds). If a classroom clock is not available, a teacher may serve as timekeeper. After allowing two to three minutes to pass, a teacher may write the time every 10 minutes on the chalkboard by erasing the previous time and entering the new time (e.g., 3:10, 3:20, 3:30). As students finish, they simply look at the board and note their elapsed time. A words-per-minute rate can be computed by dividing the total words in the selection by the reading time (words ÷ time = w.p.m.).
5. After having read the material silently, students should record their time and then raise their hand. The teacher then brings the student the prepared questions, which they must answer without referring back to the reading selection. In some classes where a majority of the students may likely have difficulty, it may be necessary to allow students to keep their books open while answering the questions. Although this practice is not recommended for all classes, it does allow for some degree of evaluation and relieves frustration on the part of some readers. In such classes, scoring will need to be interpreted on a very strict basis with more complete answers expected due to students being allowed to reread the materials while answering the questions.
6. When scoring the test without allowing for rereading or look-back, teachers can apply the following criteria: 80 percent and above—reader should find the textbook easy to read; 65 percent to 79 percent —reader should need some instructional assistance to read and understand the book but can be expected to use the book. Below 65 percent—book is probably too difficult, and the reader will require much assistance and supplemental help to use the book. Practical information can be gained by recording the particular kinds of questions that each student misses. Instruction should then be initiated that is directed to teaching subject area material in a manner that enables students to use the skills they appear to have mastered and at the same time provide practice in improving ability to answer types of questions they find most difficult.

Using a Cloze Inventory

For several decades cloze tests have been considered to be an easy-to-use group placement technique (Chatel, 2001). The test can be administered to an entire class in 20 to 30 minutes and, in most instances, will discriminate between those students who can and cannot read the book from which the test is taken. There is some evidence to indicate concerns about problems involved with having students write responses using a cloze format. Culver, Godfrey, and Manzo (1972) reported low correlations for cloze scores when compared with vocabulary and rate of reading. Although cautions should be considered, the convenience and ease of construction of cloze inventories along with an established base of empirical studies makes use of cloze inventories an acceptable alternative for use in many content classrooms. When used for screening content area reading ability, a cloze inventory appears as a reading selection with words omitted at regular intervals. The following procedure should be followed when constructing a cloze test using information from a subject area textbook.

Instructions for constructing a cloze inventory are as follows:

1. Select a passage of approximately 400 words from the first section of the adopted material.
2. Leaving the first and last sentences unchanged, retype the selection inserting a blank of uniform length (about 8-10 typewriter spaces) in place of every seventh word. As originally designed a fifth word deletion format was used in basal reading material. For subject area material, a seventh word deletion pattern is recommended due to the complexity of the material. A minimum of 50 blanks is suggested. The finished test should be similar in format to Table 9.3. It is also helpful when scoring to have numbered each blank below each blank space.
3. Prepare a “sample” cloze test containing six to ten blanks. The sample should be duplicated, shown on an overhead transparency, or printed on the chalkboard. This sample should be used prior to administering the complete cloze inventory.
4. Prepare an answer sheet showing the exact word that originally appeared in the book for each blank on the cloze test.

Table 9.3

Sample Cloze Inventory

Earthquakes

An earthquake is a sudden shaking of the earth. When a part of the earth _____ (1) suddenly, causes a pattern of _____ (2) to travel in all directions and _____ (3) some distance. These waves are the _____ (4) felt as a result of the _____ (5) earth. There are several types of _____ (6). One type is caused when large _____ (7) of rock under the earth change_____ (8). Volcanic eruptions can cause quake and _____ (9) explosions can also create tremors.

The _____ (10) dangerous type of quake is usually _____ (11) by the sudden shifting of huge _____ (12) of rock under the earth. The _____ (13) movement and change of the earth _____ (14) pressure upon these rocks until the _____ (15) becomes so great that the _____ (16) displaced. The place where the shifting _____ (17) is usually along a line or _____ (18) in the earth called a “fault.” _____ (19) cities can be destroyed or a major _____ (21) created by this type of quake. _____ (22) point of greatest destruction in an _____ (23) is usually directly above where the _____ (24) has taken place. This is called _____ (25) epicenter. At least once a year _____ (26) great quake of this nature occurs in the world.

The waves of _____ (27) caused when ... (continues for at least 50 blanks).

The following directions are suggested for administering and scoring a cloze test:

1. Each class member should participate in a cloze practice session immediately prior to completing the actual cloze inventory. Discuss the correct choices in the practice test and stress the ideas that only exact word replacements will be counted as correct responses. Students should also be informed that a score of around 40 percent correct is acceptable and that guessing is encouraged.
2. Hand out copies of the test and allow 20 to 30 minutes of silent reading time for completion of the test.

3. Each paper must be scored individually. A quick method of scoring can be developed by using an exact copy of the cloze test and cutting out l/4" rectangular notches for each blank. Above each blank write in the correct word. To score, simply place the key over a student's paper and compare answers. Misspelled words may be counted as correct if they appear to represent the original word.

Percent correct scores may be interpreted as follows:

58 percent and above —reader should find the text book easy to read.

37-57 percent —reader should need some instructional assistance to read and understand the book but can be expected to use the book.

Below 37 percent —book is probably too difficult and the reader will require much assistance and supplemental help to use the book.

A table is provided in table 9.4 to aid in rapid conversion of number of correct answers to percent and to determine reading placement levels. For those whose scores fall below 37 percent, a group reading inventory or perhaps an individual reading test should be administered. Some users may also wish to analyze cloze test errors on the basis of "type of substitution." Some readers may tend to miss specific kinds of words or words appearing in a particular part of sentences. If these patterns exist, it would be appropriate for a content teacher to initiate corrective measures to remediate the observed problem and in turn, to improve overall reading competency.

Reading researchers and education specialists have recommended other approaches to assessment which the subject area teacher may also find applicable and easily adaptable (Johnston, 1983; Valencia & Pearson, 1987). There is a continuing call for what is referred to as *interactive* assessment (Broza, 1999; Rose, 2000). Interactive assessment involves not only observing and measuring behaviors during specific testing sessions using test instruments but also during instructional interchanges such as during a reading or subject area lesson. By making assessment an on-going, instruction-related activity teachers can gain on-the-spot insights into reading behaviors if they know what to notice. As a part of a trend toward interactive or dynamic assessment several sources of information may be used. These newer approaches reflect efforts to make testing more interactive (Westra, 2003; Afflerbach 2004) and both testing and teaching more integrated. These approaches include checklists, interviews, and portfolio assessments which have been especially useful for providing direction in programming instruction which takes into account the complex interactions among the reader, the text, and the context of the reading situation. Each of the three newer, interactive assessment alternatives is briefly discussed beginning with the use of evaluative checklists.

Checklists

Teacher observation of reading and study behavior under specified conditions can provide a broad view of what elements contribute to students' progress in a subject area. Examples of such checklists can be found and used as is or adapted to more closely fit a specific instructional mode or subject area such as social studies (Smith & Smith, 1990); science (Rakes & Choate, 1990); or study and reference skills (Choate, et. al.,

1987). More specific information is provided when the checklists are designed around the subject area skills and behaviors of students which directly reflect the learning processes involved in a particular subject or content area course. Checklists are typically no more than one page in length and consist of skills or behaviors that are of particular value or utility in a specific subject or topic of study. Observation and notation of performance are generally recorded over a period of several weeks or months. Checklists are also excellent for use with interview or portfolio based procedures.

Interviews

Interviewing previous teachers of students as well as the students themselves are two sources of pertinent data. Key questions to ask of previous teachers are: How much time was spent studying_____? What was the content of the program? What was the usual format of the lessons? What was the typical performance of individual students (or the class as a whole if the previous teacher had most of the students in class)?
Which of the _____ skills was the strongest? What particular skill problems did you note? Which topics were of greatest interest? What did you find best facilitated performance? Student interviews can be conducted by selecting a sample of the class, interviewing them individually or in small groups, including if possible the ranges of ability students are likely to represent. Student self-analysis of the difficulty of a particular subject area can reveal specific kinds of problems as well as other concerns such as interest and background of experience. One technique is to construct a short interview (6-10 questions) over a specific topic which will be studied. For example: Do you know anyone from Russia? Can you show me where Russia is on the map? Why would anyone want to know about Russia? What would you like to learn about Russia? Interviews can be used early in the year or throughout the year prior to the planning of a unit of work. Student interviews can also address metacognitive aspects if students are asked to explain how they figured out _____ or explain what information in the reading helped you to determine_____?

Portfolios

Not unlike the artist who depends on the portfolio to highlight artistic skills and achievements, the learner may also clearly demonstrate weaknesses, strengths, and progress in this anchored-in-authenticity type of assessment approach. Generally, the portfolio takes the form of a folder containing selected samples of the student's work, including written responses to reading, reading logs, tests, observational notes, and progress reports. Time and effort are necessary to use this type of assessment, as with all other forms, in that the information be not only collected, but also used in the planning of instructional interventions. For more information and variations on how to use portfolio assessment see Afflerbach, 2004; Clark, C., Chow-Hoy, T. K., Herter, R. J., & Moss, P. A., 2001; Moje, Brozo, & Haas 1994; Westra, 2003; and Valencia, 1990.

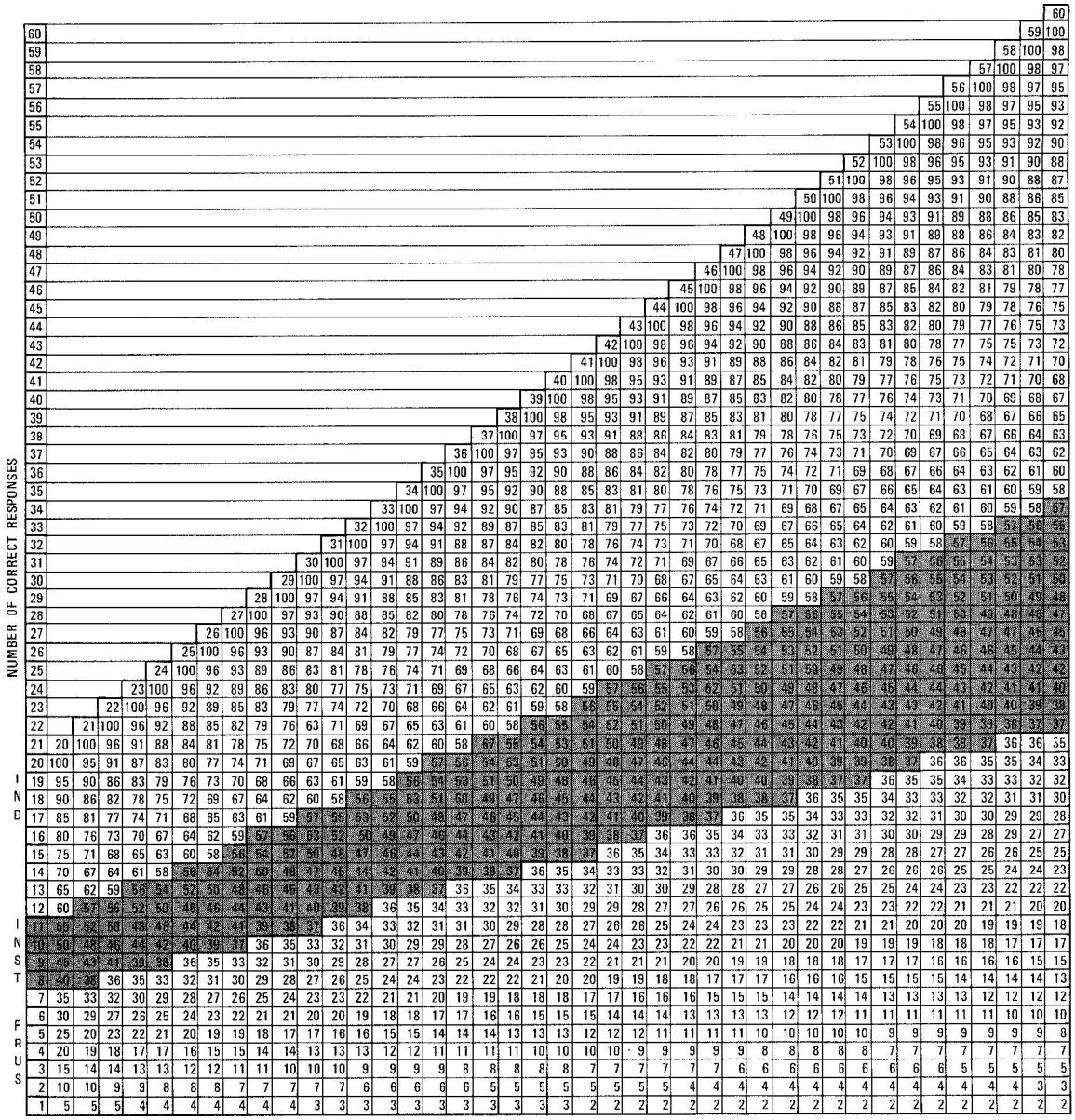

Table 9.4. Cloze placement table. (Reprinted with permission from Kendall/Hunt Publishing Company, McWilliams-Rakes, *CONTENT INVENTORIES: ENGLISH, SOCIAL STUDIES AND SCIENCE,* 1979. xii.)

Several types of informal assessment have been suggested for measuring content reading skills. Each procedure provides a direct means of providing valuable information for either improving reading in the subject area or as a placement aid. For placement purposes, the cloze inventory is recommended. If both placement and diagnostic information are needed, use of a group reading inventory along with other ongoing types of assessment such as portfolios and checklists are suggested. In most classes some type of content interest inventory or assessment of background of experience with particular topics would also be helpful. Without the type of information provided by informal content-related assessments, subject area instruction can, at best, be based upon intuition and/or a preconceived combination of ideas and instructional activities for a total class. In such classes, individual—or even intraclass—reading and learning differences are usually all but ignored.

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