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AUTHOR Gagne, Robert M.
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ABSTRACT

Analysis of the requirements for diagnostic testing of the early stages of reading competence shows that diagnostic testing needs to focus on decoding, word knowledge, and sentence processing. Reading diagnostic tests also need to assess "entry" skills for the assignment of pupils to instruction, and "exit" skills at each grade level. The 21 benchmark skills for reading diagnosis that have been identified include reading comprehension, which is conceived as being measured through cloze procedures. Arranging these skills by grade level exhibits their cumulative nature, showing how more complex skills are built from simpler ones. Diagnosis of reading skill deficiencies can be accomplished by assessing the enabling skills in sequence, beginning with the more comprehensive and proceeding to the simpler skills. (Author/RL)

DIAGNOSTIC TEST REQUIREMENTS FOR READING IN THE ELEMENTARY GRADES

-Revised-

A Report by:
Options from R&D Unit
Florida R&D Utilization Project

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Robert M. Gagné
Florida State University

Revised Edition

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Options from R & D Unit
Robert M. Gagné, Director

Florida R & D Utilization Project
Inga G. Fahs, Director
Claire Duncan, Associate Director

Office of Dissemination/Diffusion
Department of Education
Ralph D. Turlington, Commissioner
Tallahassee, Florida 32304

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William K. Durr, Michigan State University
Jean Ewing, Gainesville, Florida
Billy M. Guice, Florida State University
Roger Kaufman, Florida State University
F. J. King, Florida State University
Frances K. Kochan, Projects MARC/QUIC, Wakulla County Schools
Marilyn Neff, Dade County Schools
William R. Powell, University of Florida
Robert B. Ruddell, University of California, Berkeley
Diana Scott, Florida State University
Edwin H. Smith, Florida State University
Frederick Williams, University of Southern California

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Robert M. Gagné
Tallahassee, Florida

Title: Diagnostic Test Requirements for Reading in the Early Grades

Author: Robert M. Gagné, Florida State University
Director, Options from R & D Unit
Florida Educational R & D Utilization Project

ABSTRACT

Analysis is made of the requirements for diagnostic testing of early stages of reading competence, based upon contemporary research evidence and theory. According to this evidence, diagnostic testing needs to be accomplished within three competency strands, which are called (1) decoding, (2) word knowledge, and (3) sentence processing. It is pointed out that diagnostic tests need to make possible the assessment of "entry" skills for assignment of pupils to instruction, and also of "exit" skills at each grade level.

Reading diagnosis for normal instructional purposes is assumed to occur in classrooms which use a basal reader series for reading practice. Pupils may be divided into several groups to receive different kinds of instruction from the teacher, depending on their needs as revealed by diagnostic tests or informal "probes." Pupils may acquire reading skills as a result of direct teaching, of incidental learning, or of extended periods of learning.

Twenty-one benchmark skills for reading diagnosis are identified, including the criterion skill of Reading Comprehension, conceived as being measured by a "cloze-type" test. These skills are arranged by grade level in patterns which exhibit their cumulative (hierarchal) nature, in the sense that the more complex skills are built up from simpler ones. Diagnosis of reading skill deficiencies can be accomplished, in general, by assessing the enabling skills in sequence beginning with the more comprehensive and proceeding to the simpler.

DIAGNOSTIC TEST REQUIREMENTS FOR READING IN THE EARLY GRADES

The large individual differences in language skills among children in the elementary grades give rise to a need for assessment which diagnoses these differences, so that instruction can be adapted to the needs of the individual pupils. Although there are many materials, kits, and programs which call themselves "diagnostic" in a field such as reading, it is not always clear that they accomplish the aims preferred by elementary teachers. In fact, the very profusion of these materials, and their great variety, often seems to militate against diagnoses of instructional needs which are readily understood and capable of being translated into practical action by teachers.

Few systems of diagnosis in reading are available which have clear rational connections with the activity of reading. Many such systems appear unduly encumbered with the mystiques of "testing," such as the use of multiple-choice items and other procedures of mass testing. Most such systems lack a clear rationale for the inclusion or exclusion of specific test-item types.

This article attempts to describe what is needed for diagnosis of reading skills at elementary levels. These requirements are derived from research findings on the nature of beginning stages of reading (Carroll & Ghall, 1975; Gibson & Levin, 1975; LaBerge & Samuels, 1974; Venezky, 1972), and on information-processing analyses of the reading process (Resnick & Beck, 1976; Perfetti & Lesgold, 1978). The requirements described are intended for use (1) in evaluating the content validity of existing diagnostic tests, and (2) as a basis for the development of sound procedures for diagnosing instructional needs in the learning of reading skills of an elementary (and basic) sort.

Instruction in Early Reading[1]

The teacher of children entering kindergarten or first grade is confronted with children having widely different capabilities related to reading. Some, of course, are already able to read the simple texts or primers of commercially packaged reading programs. The vast majority do not have this capability. The performance of reading, therefore, must somehow be "broken down" into simpler components which can be taught, so as to bring each child to the point at which he or she can generate the complex, integrated performance which is reading.

One of the first problems the teacher must solve, then, is finding out what her individual pupils do or do not know, or, more precisely, what they can or cannot do. A test may be used for this purpose, or the teacher may make her own observations. Unless the teacher can keep an unusual amount of information in her head, she then makes some sort of record of these observations, that is, some recorded indication of the "entering capabilities" of each child. Often, I am told, teachers may take a couple of weeks or more to make these observations of children and then to record them for future reference.

An important decision is next made as to what to teach, and to whom. In a kindergarten, a skill not yet acquired by, say, 90% of the children may be taught to the whole class, in a game-like situation. An example is the teaching of new relational concepts, such as "underneath," "on top of," "behind," "in front of," and others of this sort. Or, a skill which has not yet been learned by ten percent of the children may be taught to those children in a

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[1] This section is reproduced from "Reading Achievement and Diagnostic Testing" by Robert M. Gagné; a paper delivered at the Second International Conference on Frontiers in Language Proficiency, Southern Illinois University, Carbondale, Illinois, February 23-25, 1978.

separate corner of the classroom; naming printed letters might be an example. In a first grade, a teacher may be able to identify four different sets of children, each set needing instruction in roughly the same skills, and thus form ad hoc groups to which different instruction is given at different times. The ideal, of course, would be the possibility of designing thirty specific instructional contents for thirty different students. This degree of individualization is only rarely possible, although it may be approached in those instances where teacher aides or parental volunteers are available for individual tutoring.

Assuming that some management scheme is found for dealing with individual differences which are initially found, differential instruction can then proceed. One group of children may be learning to say the sounds of initial consonants, another group to match rhyming words, while still another is reading aloud passages from a story. The next steps that must be taken, at various intervals of time, make up a kind of monitoring of the progress of individual students within the groups. Depending on what is found, one or more students may need to be placed in other groups, either in a group that is more advanced, or one that is less advanced, in the learning of relevant reading skills. Such monitoring of progress is done, not simply for the purpose of keeping records, but rather to make continual adjustments in the matching of instruction to the needs of individual children. Again in this case, of course, the precision of such matching will be enhanced as the resources of teaching approach those of individualized instruction. Even when teaching is done in groups, however, the need for frequent decisions about re-assignment of pupils should be constantly recognized.

As the end of a school year approaches, teachers of reading are concerned to find out what has been learned by all their pupils. The required observations

may be made in an informal manner, or they may be made by the use of tests. Two purposes are being served by the results of such observations. First, teachers need to know what total progress has been made by each child, and also by the total class. The discovery of very little learning by a child may indicate the need for some provisions for special remedial education. More importantly, though, records need to be made of what each child is able to do, so that a teacher in the next grade will gain some idea of where to begin the next instruction. It would seem desirable, too, that teachers in any given grade be able to "certify" the mastery of particular skills which are minimal objectives for that grade.

Diagnostic Requirements

If this is approximately the way reading instruction proceeds, allowing for variations in the styles of individual teachers, the following would appear to be the things that are needed to make possible diagnosis and subsequent differential instruction:

1. A carefully identified set of benchmark skills that are defined as performance objectives, arranged in a sequence reflecting their order of learning (for example, "reading printed words" must be learned before "reading printed sentences"). Benchmark skills are those which can be identified as actual components of reading (for example, supplying an appropriate missing word in a sentence is generally agreed to be a component of reading performance; in contrast, the skill of supplying a rhyming word may be related to reading, but is not actually done as a part of reading). Benchmark skills are the ones that are of particular significance, and are probably essential, in determining initial placement of children into instructional groups, as well as in determining their re-assignment at later stages of instruction.

2. A sequence of prerequisite, or "enabling" skills related to each

benchmark skill. The identification of these enabling sequences of skills is needed for the planning and for the systematic conduct of instruction within each instructional group. Thus, if an instructional goal for a group is "pronouncing multisyllable printed words of regular spelling" (a benchmark skill), an enabling skill may be "blending syllables of two-syllable words"; another enabling skill may be "pronouncing vowel-consonant combinations". Of course, an enabling skill at one level of instruction may be a benchmark skill at an earlier level. These enabling skills are identified as contributory to the benchmark skill, that is, they are prerequisite to the benchmark skill and are related to reading primarily because of this latter relationship. They are used to determine sequences of instruction within the scope of the larger objective being pursued in a particular instructional group.

3. A test of a suitably broad range of benchmark skills which can serve as an initial placement test. The assessment of each benchmark skill covered by a test of this sort should have reasonably high reliability, which implies that each of the skills needs to be tested with a number of test items (5-10 is customary). Such a test should sample skills which are appropriate to about four grades of reading instruction. Its results are used to place children in instructional groups at the beginning of a school term, or half-term.

4. An exit test of the skill objectives which are chosen for instruction in each grade. Like the initial placement test, each skill which makes up the exit test should be assessed with the number of items needed for reasonably high reliability. However, this test should be concerned only with the range of skills taught in each grade. The purpose of the exit test is to assess the achievement of adopted objectives for each grade. A cut-off

score may be used to identify children who need remedial instruction before being advanced to the next grade.

5. An entire set of definitions of test item "domains", accompanied by sample items, applicable to each benchmark skill and each enabling skill that is associated with it. These "item forms" are for use by a teacher in arranging situations so that probes can be made of the progress of individual children during the course of instruction. A probe is, in effect, a single item, or it may be two. Probes need to be used at frequent intervals during the course of instruction. In early stages of reading, the observation to be made via a probe frequently requires a productive response on the part of the child, and so must be administered to one child at a time. An example of such a probe is having the child read aloud unfamiliar printed words (such as laster, condiment, etc.) in order to assess decoding skill with multi-syllable words.

The relatively low reliability of probes, as opposed to longer tests, poses no practical problem. In using the results of a probe, the teacher is making a probability estimate that the child does or does not need further instruction or practice on a particular skill. Should the estimate turn out to be wrong, correction will normally take place at the next instructional stage. Probes may also be viewed as "curriculum-embedded" tests, since their administration must be woven into the instruction a teacher gives to a group of children, without a definite break between the two functions.

With these five tools, teachers will be able to carry out systematic diagnosis and systematic teaching of required skills. Tests of benchmark skills make possible the determination of instructional objectives and the establishment of minimal exit skills for each grade. Accompanying lists of enabling skills make it possible for the teacher to know what ground has been

covered, and what must next be learned. Placement test results can be used to do the initial job of assigning pupils to appropriate instructional groups. Probe items are later employed to track the progress of individual children within such groups, or within tutoring sessions (when that mode is employed). And exit tests yield results which make possible a final check on the achievement of essential skills at each grade level.

Individual Differences in Reading

What are the essential intellectual operations or states that differentiate good readers from poor readers? The search for these factors has been conducted over many years, and the results are found in many different publications. It is not evident at this date that the findings can be interpreted with perfect confidence. Yet there does appear to be a converging sense of agreement on the part of contemporary reading investigators, with only one or two notable exceptions.

A valuable set of concepts which integrate research findings concerning reading skills has been contributed by Perfetti and Lesgold (1978). On the basis of an information-processing analysis of reading, they suggest three strands of reading as follows: (1) speed of phonological coding ("decoding"); (2) knowledge of the meaning of words; and (3) sentence processing in terms of syntactic and semantic constraints.

1. Decoding. As a highly skilled performance, decoding may be described as the automatic processing of previously unencountered printed words in terms of their sounds. The descriptive word "automatic" implies that this kind of processing is done rapidly and without hesitation. Presumably, skilled decoding means that when the reader encounters an unfamiliar printed word in the midst of a sentence, he processes it by its sound, and goes right on with his reading. When such a word is processed in accordance with its sound, it

may be possible for the reader to match it with a word already familiar to him in his oral (listening) vocabulary. Otherwise, by continuing to read without stopping, the reader may be able to infer the meaning of the word from its sentence context.

A fair amount of evidence supports the idea that skilled decoding is a part of good reading, despite rational arguments that it is unnecessary (Smith, 1978). Decoding skills involve responding to regularities in print-sound correspondences ("phonic generalizations") beginning with the sounds of letters (Calfee, Chapman, and Venezky, 1970; Gibson, Osser, and Pick, 1963; Samuels, 1970). From this prerequisite, learning proceeds to the pronouncing of vowel-consonant combinations (Calfee, Chapman, and Venezky, 1970; Venezky, and Chapman, 1970), a stage which includes blending (La Berge and Samuels, 1974; Haddock, 1976; Muller, 1973). Basic skills of letter sounding are combined in syllable and word decoding (Gibson and Levin, 1975; Perfetti and Hogaboam, 1975; Spoehr and Smith, 1973; Guthrie and Seifert, 1977; Savin, 1972).

Besides its involvement in the reading of unfamiliar printed words, decoding may actually serve other functions, which have not as yet been fully explicated (Danks and Fears, 1978; Perfetti and Lesgold, 1978; Venezky and Massaro, 1978). These appear to derive not simply from the capability of word pronunciation, but from its automaticity (La Berge and Samuels, 1974). The main hypothesis for this added function is that the reader's processing of the meaning of text (i.e., comprehension) is interfered with by the cognitive effort of decoding when the latter has to be done in a hesitating and inexpert manner. According to Mattingly (1972), the successful reader begins by forming a "quasi-phonological " representation of the printed text.

The activity of decoding, which presumably leads to phonological word processing by the reader, apparently persists in good readers. This is true

even when the quality of reading performance is measured by reading comprehension tests (Guthrie, 1973; Calfee, Lindamood, and Lindamood, 1973). The evidence of this continuing correlation appears to be quite strong. In addition, evidence surely exists to show that decoding skills can be readily learned by young children, and that such skills make a positive contribution to progress in reading (Resnick and Beck, 1977; Marsh and Mineo, 1977; Goldstein, 1976; Wallach and Wallach, 1976).

2. Word knowledge (semantic coding). This strand of skills comprises facility in the recall and use of words, to fill gaps, to form sentences, to answer questions, to identify synonyms and antonyms. Presumably, this capability reflects the extent of the learner's functional vocabulary. It might also be called "verbal fluency."

Generally, substantially high correlations have been found between size of vocabulary and reading proficiency (Gibson and Levin, 1975; Guthrie, 1973; Irwin, 1960). Calfee, Chapman, and Venezky (1972) suggest that a measure of vocabulary quality be employed, rather than quantity. In any case, it is clear that the stored meanings of many words are retrieved and utilized by the reader in processing printed text. Powell's work (1971) has indicated that satisfactory reading at about the beginning of the fourth grade requires that the reader instantly grasp the meaning of at least 3500 words.

3. Sentence processing. This is the capability of identifying, and also producing, sentence structures in their proper form. In its simplest variety, it may be observed in such a performance as completing a sentence with a word or phrase, or as putting a scrambled sentence in order (Weaver, 1976).

A number of studies have found critical relationships between reading proficiency and the processing of sentences in terms of their syntactic and

semantic structure (Isakson and Miller, 1976; Steiner, Wiener, and Cromer, 1971; Clay and Imlach, 1971; Weinstein and Rabinovitch, 1971). Poor readers, these results suggest, tend to process one word at a time, and fail to make use of context clues provided by syntax or the semantics of word groups. It is probably of some importance to note that the prediction of meaning by way of syntactic and semantic clues is the primary way of tackling the task of reading, in the view of Frank Smith (1977). A similar emphasis on the utilization of sentence cues is given by Goodman (1970).

The Setting for Diagnostic Testing

Consideration of the preceding evidence and theory makes it possible to describe some features of a reading program that would seem to be optimally effective for a population of students that spans a large range of language skills at the time of school entry.

The Reading Program

The assumptions I make about a desirable reading program are as follows:

At the beginning stage, the child must learn to identify printed letters, beginning with their lower-case forms and proceeding to their upper-case forms. The important skill is identifying; for convenience, pupils may be taught the names of the letters, but they also need to learn to distinguish the sounds of letters. Both of these skills — identifying letters and sounding letters — make up the very early part of a good reading program. They are followed by practice in the oral "sounding" of printed letter combinations, the blending of vowel-syllable combinations, of whole words and of multisyllable words.

Attaining the skill of decoding means that the reader, when he encounters a printed word that he does not immediately recognize in its printed form (for example, harness) represents its sound to himself (or aloud, if he is reading orally), and then matches that word-sound with one that is already

in his oral vocabulary (as is likely the case with harness). An extremely important point, here, is that initial pronunciation of the printed word does not have to be exact, only approximate (Venezky and Massaro, 1978), in order for the match with oral vocabulary to be made. One implication of this fact is that the skill of "word sounding" does not have to be one which enables the reader to go directly from print to exact pronunciation. For example, it is not of consequence whether the second t in Atlanta is the usual /t/ or one with a dental flap (the pronunciation of native Atlantans). It is "Atlanta", a word familiar in the oral vocabulary, in either case. A second implication is that reading programs which stress highly precise rules of word pronunciation are probably wasting time.

A second essential strand of instruction in reading deals with knowledge of word meanings. Naturally, this strand begins with oral language. Kindergarten children begin school with the possession of word knowledge; some with quite extensive vocabularies, some with very few words. Instruction is given to increase the knowledge of orally spoken words - at first the concrete words, nouns and adjectives, and then with increasing emphasis on relational words, prepositions and verbs. This is often called "concept learning." In the first grade, once they are able to distinguish printed forms, children begin to learn to recognize words in print which are already in their oral vocabularies. By using very simple texts for reading, children learn to recognize more and more words by sight, and thus increase their "printed word vocabularies." Continued practice in reading rapidly enlarges the store of printed words which can be recognized by sight.

A third strand in reading has to do with the structure of language - knowing how to form a proper sentence, and knowing how to "take in" information in sets of sentences. As progress in learning proceeds, the student

derives meaning from entire paragraphs composed of related sentences, separated in their printed form by typical punctuation. Initially, instruction in this strand may have an oral form, involving, for example, practice in following oral directions. This may be followed by exercises in completing sentences with words that make both syntactic and semantic sense. Once a sufficient printed word vocabulary has been learned, exercises in forming and completing sentences, or in rearranging scrambled sentences, may be conducted in that medium. The continued reading of basal readers also contributes to the improvements of this type of skill. Reading may be done in part orally, and in part silently. Skills in this area are also enhanced by practice in the answering of wh- questions which paraphrase the text.

These three strands have their apex in the complex activity of reading comprehension. In general, proficiency in reading comprehension improves as the learner reads more and more extensively with increasingly varied materials. A typical basal reader series contributes to this aim. By the time of the fourth grade, a good reading program uses a great variety of textual passages, often followed by questions to be answered by the student.

Three Ways of Learning Component Skills

A typical reading program teaches necessary competencies in three different ways:

(1) Direct teaching. In this method, the teacher identifies the specific skill to be learned, and then arranges the learning situation so that the child will learn that particular skill within a reasonably brief period of time. For example, if the objective is "distinguishing the sound of "a" in single-syllable words ending or not ending in e (mat - mate)," a specific set of exercises may be designed and conducted to teach this skill (Fries, 1963).

(2) Incidental learning. Some skills are learned without the use of specific instructional exercises. They are simply learned "along the way" in a typical reading program. This is not to say that these skills are unimportant. However, since the activity of reading, oral or silent, is a regular part of a reading program, a number of skills may be expected to be acquired as a result of that activity. A simple example is reading from left to right. At a later stage, many new words are incidentally learned during the activity of reading.

(3) Extended learning. Some kinds of competencies are developed over relatively long periods of time. While they may be influenced by either direct teaching, incidental learning, or both, they cannot be directly taught within a reasonably short period of time. These competencies have a developmental character, in the sense that they improve gradually with continued education. In the extreme case, there are competencies which may be genetically determined and uninfluenced by learning (such as short-term memory capacity). Some competencies related to reading, however, may be assumed to be influenced by instruction extending over the years. An example is the ability to understand increasingly complex printed texts.

How are the essential skills of reading learned? Are they all learned by direct teaching, by incidental learning, or are some learned only by extended learning? Table 1 summarizes what appear to be reasonable answers to these questions.

As the table indicates, the skills involved in decoding would appear to be most readily and dependably achieved by direct teaching. Beginning with skills such as letter identification and proceeding to word-component sounding and the (approximate) pronouncing of new and complex words, exercises requiring student practice in these activities are most useful. It is true,

of course, that decoding skills can be acquired by incidental learning, and often are by children who learn to read without instruction. Obviously, though, this is an undependable method. The best available evidence implies that unless decoding skills are learned to the point of automaticity, the activity of reading comprehension may be adversely affected. Accordingly, the table indicates that teaching which proceeds on the assumption that decoding skills will develop incidentally, or under the influences of "extended learning," is placing dependence on a highly uncertain method.

Table 1

Means of Learning Component Skills
in Three Component Strands of Reading Performance

Skill Strand	Means of Learning		
	Direct Teaching	Incidental Learning	Extended Learning
Decoding	All	Some; an uncertain method	An uncertain method
Word Meaning	Some	Many	Some
Sentence/text processing	A few skills and specific strategies	Many	Many

The strand of word meaning is contributed to in part by all three means of learning. Direct teaching is done, particularly in the early grades, to promote the child's learning of new word meanings. Practice in reading itself leads to the incidental learning (or "discovery learning") of many new word meanings. As learning continues, the acquisition of new word meanings and meaning elaborations takes on a developmental character, and comes to depend increasingly upon the store of knowledge possessed by the individual.

With regard to the third strand, sentence and text processing, direct teaching can contribute to the learning of a few essential skills. The skill of forming complete sentences from incomplete or scrambled parts is one of these. Another example is the use of prefixes and suffixes. At a later stage of learning, the student may also acquire by direct practice certain strategies which enable him better to search for such inferential concepts as the "main idea," "temporal sequence," "author's intent," "probable consequences," and the like. Many higher-level skills of reading comprehension, it would appear, are acquired through the means of extended learning. They develop as a result of continuing experience in reading, and depend upon the amount and variety of reading which is done over long periods of time.

Implications for Teaching

This description of three skill strands in reading and how they are most probably learned has some implications for teaching. First, it means that a reading program should have a continuing instructional component of the performance of "reading from a printed page," beginning at a very early stage. This activity should begin (as most reading primers do) with simple sentences and highly familiar words, and proceed to greater complexity, passage lengths, and less familiar words, as the child's competencies develop. The main reason for this continued reading practice is to foster the learning of component skills by incidental learning, and over a longer period of time, by extended learning. Practice which involves oral reading in the beginning is designed to have an increasing proportion of "silent reading," followed by question-answering.

A second and equally important implication is that some skills must be taught by direct teaching, because they cannot be dependably established by

incidental learning. The skills of decoding fall mainly in this category. Also, many new "sight words" need to be directly taught at the stage of beginning reading; as practice in reading continues more new words will be learned incidentally. Some teaching of sentence construction (oral) exemplifies the requirement of direct teaching at early stages in the strand described as "sentence and text processing." Later, there appear to be some strategies of text interpretation which can be aided by practice in question answering. To a large extent, however, the skills in this strand are acquired by incidental learning.

Stages of Basic Skills in Reading

This review of the research, and description of the teaching situation, makes possible an estimate of the requirements of diagnostic testing in reading. The aim is to provide a list of performances (instructional objectives) which have a definite and specific relation to reading. These performances are either a part of the act of reading, and therefore qualify as benchmark skills; or they contribute as prerequisites to these components, as enabling skills.

In general, the stages of reading employed in the list follow those described by Chall (1978) as Prereading; Stage 1, Initial Reading; Stage 2, Reading Consolidation; and Stage 3, Learning from Reading. We assume that kindergarten instruction is normally devoted to Prereading, or reading readiness. Stage 1, Initial Reading competence, is assumed to be imparted in Grades 1 and 2. Stage 2, Reading Consolidation, or facile reading, is attained in Grade 3. Following this, beginning at the latest in Grade 4, the world of reading is open to the reader for Learning from Reading. His comprehension improves with practice, and his knowledge of the world continues its vast expansion as a result of reading in a variety of content areas.

The skills to be described incorporate the assumption that word decoding is an essential and continually valuable capability of the good reader (cf. Carroll and Chall, 1975). The inclusion of decoding skills determines the entire pattern of diagnostic testing, since it is most reasonable to think that these skills are acquired at early stages, as enabling skills for other reading activities. If decoding skills are not assumed to be necessary, as a small number of investigators maintain (e.g. Smith, 1977), the performances to be tested display a quite different sequence, in which printed word knowledge takes on greater emphasis at earlier stages. The consensus of the great majority of researchers has been adopted here; decoding skills are stressed at the earliest stages of learning to read.

In general, the objectives described for each skill indicate the expected degree of skill (how well or how much) for a performance measured at the end of a school term. For example, the skills listed under the Readiness Stage are estimated as desirable goals for kindergarten; virtually all kindergarten children should possess these skills in May or June of their kindergarten year. If they do not, they will not be able to learn readily the skills which are essential for the first grade. The estimates are for minimal essential skills; naturally, many children will be able to progress beyond these stages of readiness. Of course, diagnostic procedures do not have the intention of "holding back" individual progress in reading. Children should be allowed to gain proficiency as rapidly as they can, in whatever grade they happen to be. Enrichment activities in reading take many forms, and are usually not difficult to provide. In their simplest form, they are simply varied language and reading materials that are of interest to children.

Readiness Stage

Skill 1. Printed Letter Identification. The objective is: Given a display of printed letters (capital and small) in large type, one by one, identifies each letter (a) by calling its name, and (b) by matching its upper case and lower case forms. This objective needs to be attained to a "mastery" level, and to be performed without guessing or hesitation. The assessment of (a) must be done for individual children (whether or not they are assembled in groups), since an oral response is required. The (b) portion can also be done individually, although a paper-and-pencil form appears to be feasible. Correlational studies continue to reveal relationships between letter naming and reading progress (Chall, 1967; McCall and McCall, 1969). The child must know each letter's name in order to receive and understand further instruction.

Enabling skills. It is not expected, of course, that kindergarten children will be able to perform Skill 1 at the time of entry into this grade, although some will. In fact, the intention is to indicate this skill, and others under each heading, as minimal exit skills for the respective stages. A number of enabling skills need to be assessed, representing earlier stages of "readiness," and implying the kinds of instruction needed.

Subskill 1-1. Given printed letters (upper and lower case) in large type, displayed in random order, matches each letter to a designated sample.

Subskill 1-2. Given printed letters (upper case) in large type, matches to its lower case form (or vice versa).

Subskill 1-3. Given printed letters (upper and lower case), displayed one by one in large type, names each letter.

Skill 2. Letter Sound Identification. The objective is: Given printed short words which are made readily recognizable (by pictures, or in oral phrases), pronounces the initial consonant or initial short vowel with emphasis, along with the rest of word. (Examples: r-r-r-ake, a-a-a-m). The intention of this objective is to assess whether the child can say the sound of each consonant and short vowel. It is generally considered desirable that this skill be tested in such a way that the letter to be pronounced occurs in a word context. Of course, the words chosen for the task should be those which reflect the most highly probable letter sounds, not the exceptional ones.

Subskill 2-1. Sounding Letters. The objective is: Given lower-case and upper-case letters displayed one by one in large type, identifies each by its modal sound (The intention here is to have the child say the most frequently occurring sound of each letter; for vowels, this means the "short" sound). Some reading programs strictly avoid teaching children to say the sound of individual letters. Often, the reason given is that each given letter seldom represents a single sound in English words. While this is undoubtedly true, we do not consider it a valid reason for avoiding the teaching of a modal sound of each letter at an early stage. Variations in this modal sound will likely be encountered later on during the reading of text, and these can be acquired incidentally as whole words are learned.

Skill 3. Oral Word Knowledge. The objective is: Given short incomplete sentences spoken by the teacher, completes oral statements of the sentences using appropriate nouns, adjectives, verbs, and propositions. The situation in which the incomplete sentences are to be presented may include pictures, diagrams, or real objects. In administering a test item, the teacher states an incomplete sentence such as "John is riding on a _____," and asks the child to complete the sentence by supplying the word (corresponding to a picture of John on a bicycle). In a variant of this form, questions may be asked, such as

"What is John doing?" Usually, nouns are easy. Emphasis should probably be placed on verbs (e.g., open, close, raise, lower) and on prepositions (e.g., above, below, before, after). Stress is given to these relational concepts in programs such as the Boehm Resource Guide for Basic Concept Teaching (1976).

It may be noted particularly that standards for this assessment cannot be stated with assurance, although some estimates are available. Words whose meaning is to be understood should surely include (1) words likely to be used by kindergarten and first grade teachers in giving instruction; and (2) words contained in beginning readers. Various modern revisions of the "Dolch List" (Buckingham & Dolch, 1936) are currently available (Kucera and Francis, 1967; Taylor, Frackenpohl and White, 1969).

Enabling skills. Skills of the enabling sort are not usually identified for Skill 3. The child's vocabulary of meaningful words continues to grow from the time of his first utterance. Obviously, too, children learn from an early age to respond to simple oral commands. Sometimes, the testing of this capability is suggested.

Skill 4. Making Oral Sentences. The objective is: Given three orally identified words displayed in print (generally, two nouns and a verb), states orally a sentence with proper arrangement of actor, action, object (recipient) (location). The child's use of basic rules of sentence forming is being assessed by items of this sort. Such a capability is directly involved in the prediction of English communications, including the "reading ahead" that is a feature of later reading comprehension. At this stage, relatively simple sentences should be employed for testing.

Enabling skills. Many children will perhaps show their mastery of Skill 4 quite early in the kindergarten year. For those who do not, it may be necessary to test one or more enabling skills.

Subskill 4-1. Given a single word (verb or noun), states a sentence including the word.

Subskill 4-2. Same as Skill 3, Oral Word Knowledge.

While other enabling skills are involved, they are quite simple, and usually do not have to be tested. Obviously, the child must be able to use known English words in simple sentences, as evidence of a "production vocabulary."

Initial Reading - Grade 1

The following are estimates, derived from various sources, of skills to be attained in the first grade. Some pupils may possess these skills upon entry. Virtually every child should be able to perform these acts without hesitation by the time he or she is ready to leave the first grade. It may be noted that this statement involves the assumption that "synthetic phonics" (Chall, 1967) are to be given initial emphasis.

Skill 5. Sounding Vowel-Consonant Combinations. This is the essence of decoding skill, and it obviously involves the blending of letter combinations. The objective may be stated as follows: Given displays of printed VC and CVC combinations, identifies them by English language sounds. The entire range of such combinations which occur in English constitutes the domain for test items (Fries, 1963; Fry, 1964). In the selection of items, attention needs to be given to the frequency of phonic generalizations, including those pertaining to consonant blends, the silent final e and others (Clymer, 1963; Burmeister, 1968). Testing must be individually done, since produced responses are required. The child's responses to the displayed letter combinations should be immediate and without hesitation, to indicate appropriate mastery of the blending skills.

Enabling skills. There appear to be some prerequisite blending skills which make the learning of Skill 5 an easier task.

Subskill 5-1. Given oral pronunciation of the individual letters of printed VC's and CVC's in unblended form, pronounces the combination in blended form. (Example: Teacher says /a/.../b/; child says /ab/). This is a simpler blending skill, often used as a "criterion exercise" during the teaching of Skill 5.

Subskill 5-2. Given vowel-consonant combinations, spoken by the teacher, matches them with appropriate printed forms (or with parts of printed words). Items of this sort are not uncommon in available diagnostic tests, probably because they lend themselves to a multiple-choice format.

Subskill 5-3. Letter Sound Identification. This is Skill 2.

Skill 6. Using Oral Sentences. Given a displayed picture, diagram, or actual event, describes the depicted agent, action, object, recipient, and location (as appropriate), using complete sentences. What is being assessed is competence in producing whole sentences of proper syntactic and semantic form. Note again that oral responding is required, and that group testing techniques cannot be substituted. This skill contributes to the "forward prediction" of sentence meaning in the reading of text.

Enabling skills.

Subskill 6-1. Given short oral sentences spoken by the teacher, answers wh- questions by naming the agent, action, object, recipient, and location. Sentences should be relatively short in order to avoid the influence of memory limitations. Again in this instance it may be noted that this is merely an enabling skill, since the responses required may be only single words rather than whole sentences.

Subskill 6-2. Making Oral Sentences. Same as Skill 4.

Subskill 6-3. Oral Word Knowledge. Same as Skill 3.

Skill 7. Printed Word Knowledge-1. The objective is: Given printed words from a list of 200-400 high frequency words (e.g., Kucera and Francis, 1967), displayed one at a time, names the word orally, and identifies an associated word or phrase displayed in print and spoken by the teacher. Essentially, this objective is a description of "recognizing printed word meanings." The suggestion is that it be tested in two stages, first naming orally the printed word, and second, choosing a "definition" from several alternatives. If the first stage cannot be accomplished, then the relation of the second to the act of reading is tenuous. Note, however, that the "definition" may be very loose, and is perhaps better described as an "associated word or phrase." Alternatives to be rejected ("misleads") should be grossly wrong.

Enabling skills. Generally speaking, the number of printed words which can be identified in print may be expected to increase from the zero point in a continually increasing fashion throughout all the phases of beginning reading. Thus, the number of printed words to be learned in earlier years cannot be specified exactly. Obviously, though, these previously learned printed words have a cumulative "enabling" function.

Subskill 7-1. Identifying Word Meaning. The objective is: Given a word (from a high frequency list) spoken by the teacher, identifies an appropriate "definitional phrase" in a set of printed alternatives read by the teacher, the misleads in the set being grossly wrong. This enabling skill is obviously a part of Skill 7, the other part being oral naming of the printed word.

Subskill 7-2. Oral Word Knowledge. Same as Skill 3.

Skill 8. Identifying Printed Sentences. The objective is as follows: Given simple printed sentences (without dependent clauses) with words in random order, orally states (alternative: prints) complete sentences in proper

order (Vogel, 1975; Weber, 1970). Sentences should be resonably short. This too is a "production" measure; choosing correct sentences from sets cannot be legitimately substituted. If children have learned to print, writing out the sentence can be employed. However, it would be preferable for this test not to be contaminated by competence in printing, if there is any doubt about the latter. Another method would be to number the words, and have the children record the correct order by numerals. Best of all, probably, is oral responding. In general, the sentences should be composed entirely of words that the child already identifies in print. It will be evident that this skill makes up part of the strand of "meaning prediction" as discussed by such writers as Smith (1973) and Goodwin (1970).

Enabling skills.

Subskill 8-1. Same as Skill 6, Using Oral Sentences.

Subskill 8-2. Same as Skill 4, Making Oral Sentences.

Subskill 8-3. Since the sentences of Skill 8 are to be composed of recognizable printed words, Skill 7, Printed Word Knowledge-1, is a prerequisite.

Skill 9. Spelling Patterns in Words. The objective is: Given single-syllable words and single-syllable word endings (at, mat; sun, run, etc.), sounds them with their "most likely" pronunciation. This is a continuation of assessement of decoding skills, with emphasis on the regularities of English word components sometimes called "spelling patterns" or "phonograms." Examples include one-syllable words ending in vowels (no, bo; my, shy), closed syllables (sit, hit; but, nut), and words or syllables with vowel blends (boat, soap; nail, pail) (cf. Burmeister, 1968). This is another skill that should be exhibited with promptness of response, whether or not the words are familiar in their printed form. Produced responses are required.

Enabling skills.

Subskill 9-1. Given sets of printed words, selects a word from an unfamiliar set which matches the vowel sound in a familiar target word. Example, the target word slit is to be matched in vowel sound to the unfamiliar word (snit). This is a fairly common form of group test. It may be employed to assess a prerequisite skill, but it does not substitute for Skill 9.

Subskill 9-2. Same as Skill 5, Sounding Vowel-Consonant Combinations.

Skill 10. Oral Reading. The objective is: Given a printed text composed at least 90% of words already identified (Skill 7), reads successive sentences aloud, without hesitation, and with appropriate emphasis, stops, and inflections. The test which reflects this objective assesses the ability to comprehend series of meaningfully connected sentences, and to make the meaning "sound right" orally. A test of oral reading carries a particular role among diagnostic reading tests. On the one hand, it partakes of a number of different component skills, combined into the total act of reading. On the other, oral reading is itself something like the competency which is the ultimate goal, since if done properly it involves "reading with comprehension." (This is of course not to say that oral and silent reading are equivalent tasks).

Oral reading exercises present opportunities for diagnostic suggestions by the tabulation and analysis of miscues (Goodman, 1970). A number of different systems of miscue analysis have been proposed (Spache, 1976). In terms of the present report, it would appear that three primary questions may be addressed by oral reading exercises:

(1) Does the error (word or syllable substitution) indicate difficulty with phonemic encoding ("decoding")?

(2) Does the error indicate inadequacy in printed word recognition?

(3) Does the error indicate difficulty with the construction of sentence meaning?

Specific techniques of assessment of these and other types of reading difficulties are described in connection with the various specific systems of testing oral reading.

An important function of oral reading exercises, both as modes of instruction and testing, is the establishment and assessment of several kinds of reading skills which appear to be best acquired by incidental learning. Practice in oral reading, assumed to be a continuing part of any good reading program, provides successive occasions during which some relatively simple, although important, skills pertaining to the performance of the reading act may be acquired. Included are such basic concepts as (1) the sign function of printed symbols; (2) the message function of written language; (3) the denotative meanings of words: among others(cf. Powell etal, 1977).

Enabling skills. The integrative nature of the task of oral reading suggests that enabling skills for this performance come from three "strands" of skill development: phonological coding, printed word knowledge, and meaningful sentence-using.

Subskill 10-1. Same as Skill 5, Sounding Vowel-Consonant Combinations.

Subskill 10-2. Same as Skill 7, Printed Word Knowledge-1.

Subskill 10-3. Same as Skill 8, Identifying Printed Sentence Order.

Skill 11. Identifying Phonic Syllables. The objective is: Given printed multi-syllable words (confidence, circus), identifies division of words in accordance with the rules of phonic syllabication. The most generally applicable rule appropriate to such a test is that every vowel or vowel combination means a syllable (with the exception of "vowel-consonant-e" ending). Two or three additional rules also have high predictive probabilities for pronunciation (Clymer, 1963; Burmeister, 1968). This skill is a component of the decoding of multi-syllable words, since the "letter pattern" to be sounded must be identified before sounding and blending of the whole word can readily occur. Assuming the words are (orally) familiar, this skill is often measured by means

of a multiple choice test. Requiring produced responses which mark the syllables (cir/cus) is at least an equally good testing method. It has frequently been noted that what are here referred to as "phonic syllables" do not always correspond with structural or "written syllables." Learning syllabication rules for writing must be considered, therefore, a distinctly different activity.

Ititial Reading - Grade 2

In large part, the skills of initial reading competence in Grade 2 are continuations of those of Grade 1. The distinction in minimal standards between the grades is somewhat arbitrary at the present time. It also depends upon decisions about priority in emphasis. For example, decoding skills may be given priority in Grade 1 over recognizing printed words, or the reverse may be the case. The results in either case are predictable; in one case, children will master the decoding of new words but possess a relatively small "printed word vocabulary," while in the other, a large number of recognizable printed words will be accompanied by as yet undeveloped ways of attacking unfamiliar printed words. The former choice is assumed in the current report. Whichever choice is made, however, there can be no doubt that continuing development of all the skills is essential for the ultimate attainment of proficient reading.

Skill 12. Sounding Multi-Syllable Words. The objective is: Given printed words with regular (predictable) spelling-sound correspondences (e.g., continent), states the words aloud as a total unit, without hesitation. The assessment implied here is that the child will say "continent," not "con-ti-nent." In other words, the items test multi-syllable blending, as well as the modal pronunciation of the individual syllables.

Enabling skills.

Subskill 12-1. Given a printed word containing a pattern of letters forming a common English syllable-sound (as ake in make), and instruction to form other words containing the same sound combined with a designated letter (as, bake) states the newly formed words orally. In a common form of paper-pencil test, the pupil is asked to select the matching word from a set of alternatives. The English-syllable sounds may be those that occur at the end of words (e.g., ite), at the beginning of words (e.g., sen), or in the middle of words (e.g., om).

Subskill 12-2. Given a syllable spoken orally by the teacher, selects the printed word from a set (of four) which contains this syllable. This is a fairly common kind of group multiple-choice test, which may be considered a prerequisite to Skill 12.

Subskill 12-3. Same as Skill 11, Identifying Phonic Syllables.

Skill 13. Printed Word Knowledge-2. The objective is: Given a printed list constituting a sample of 300-1100 orally familiar words, reads them aloud and states a relevant associated phrase. The proper number which is to represent the child's "sight vocabulary" depends on the reading program being used. Some programs introduce new sight words at a faster rate than others. Words on the Dolch list (Kucera & Frances, 1967) may be considered an absolute minimum. The words should be read off without hesitation, and "defined" by means of a relevant associate phrase (as, for example, funny: "makes you laugh"; enough: "I've had enough").

Enabling skills. Enabling skills in this instance simply refer back to word knowledge skills which have presumably been attained in previous grades.

Subskill 13-1. Same as Skill 7, Printed Word Knowledge-1.

Subskill 13-2. Same as Skill 3, Oral Word Knowledge.

Skill 14. Factual Question Answering. The objective is: Given sets of meaningfully connected short printed sentences containing modifying phrases and not more than one subordinate clause, gives appropriate answers to wh- questions delivered orally. The answers can be located directly in the text. However, the relations between parts of sentences (anaphora) may have to be inferred (cf. Davis, 1968). Alternatively, the objectives may be: selects appropriate answers to printed wh- questions. In the first form, assessment must be done individually. In the second, multiple-choice group tests may be employed. Assuming that the child has in fact mastered prerequisite objectives, such as Skills 7 and 8, the second method of testing (paper and pencil) does not seem inappropriate. When there is doubt about the prerequisite skills, oral testing would appear to be a better approach.

What is being tested in this case is basic comprehension skill in its total, or "integrated" form. Its attainment indicates that printed texts have been processed semantically, so that paraphrasing reflected in the questions is not an obstacle to correct responding.

Enabling skills. Subordinate skills are those that have previously been attained at earlier stages of instruction.

Subskill 14-1. Same as Skill 8, Identifying Printed Sentences.

Subskill 14-2. Same as Skill 7, Printed Word Knowledge-1.

Stage 2. Reading Consolidation (Grade 3)

Once the child has acquired the skills of Initial Reading, he possesses the basic capabilities which will enable him to become a highly competent, "good" reader. To make this progress, he needs to practice the skills he has acquired, aiming for consolidation, fluency, and somewhat greater speed in reading. Instruction in the third grade normally has these aims, and makes use of greatly increased volume of reading assignments in story books and other printed matter.

Skill 15. Identifying Literal Content. The objective is: Given a printed paragraph on a familiar topic, composed of sentences with not more than one subordinate clause, and possessing one main and one or two subordinate themes, identifies paraphrased sentences expressing "main idea" and "subordinate details." Here we have a very common kind of "reading comprehension" test, asking the child to categorize the meanings of sentences in a text. Although oral responses could be required, the necessity for them does not appear to be pressing. Assuming that prior skills have been learned, at this stage the child may be asked printed questions and given printed alternatives in ways which probably do not contaminate the assessment of his competence in reading. Presumably, this stage of development will be attained at the end of Grade 3 by virtually all children. Although fairly high correlations are to be expected between this skill and "academic intelligence," it is generally considered to be an indication that comprehension has attained a reasonable state of development. The test asks the pupil to make the kind of immediate inferences about the text which are meaningfully conveyed by the text itself. Items in this category should studiously avoid calling upon "world knowledge" which is not contained in the text. It may be noted that a different kind of "inference" question calls for the identification of anaphoric reference from one sentence or sentence part to another (cf. Davis, 1968).

Enabling skills. Subordinate skills of comprehension are those which have been attained at earlier stages.

Subskill 15-1. Same as Skill 14, Factual Question Answering.

Subskill 15-2. Same as Skill 13, Printed Word Knowledge-2.

Subskill 15-3. Same as Skill 10, Oral Reading.

Skill 16. Facile Oral Reading. The objective is: Given printed paragraphs of low syntactic complexity, containing familiar printed words and up to 10% unfamiliar words of regular spelling, reads orally without hesitation.

Essentially, this task tests both sentence structuring and decoding skills using printed text. The pupil should at this stage read orally with reasonable speed and with appropriate inflection controlled by punctuation marks. If decoding skills have been mastered, he should not be slowed appreciably by words that are regularly spelled but unfamiliar in print (e.g., a word like transcontinental).

Enabling skills.

Subskill 16-1. Same as Skill 15, Identifying Literal Content

Subskill 16-2. Same as Skill 13. Printed Word Knowledge-2.

Subskill 16-3. Same as Skill 12, Sounding Multi-Syllable Words.

Skill 17. Inferring Word Meaning from Context. The objective may be stated as: Given printed paragraphs of sentences with moderate syntactic complexity, containing unfamiliar words (e.g., "laster") whose meaning can be inferred from the context, states a simple (approximate) definition. This is a skill which may be considered an essential part of what is meant by reading comprehension. The use of printed multiple-choice items is not inappropriate, provided that decoding skills (such as Skill 15) can be assumed. (Note, however, that unless such skills can be assumed, a printed text is not appropriate, but completely invalid).

Enabling skills.

Subskill 17-1. Same as Skill 15, Identifying Literal Content.

Subskill 17-2. Same as Skill 14, Factual Question Answering.

Subskill 17-3. Same as Skill 13, Printed Word Knowledge-2.

Subskill 17-4. Same as Skill 10, Oral Reading.

Skill 18. Word Meaning: Suffixes and Prefixes. The objective is: Given familiar root words (e.g., consistent) and a printed sentence containing a blank to be filled, supplies the prefixed word to complete the meaning (Example: People who change their minds many times in a few minutes are said to be _____). Or, given a familiar printed word (e.g., hope), and a printed sentence containing a blank, supplies the suffixed word to complete the meaning (Example: A person who has hope is _____). Children should be able to show that they have acquired this skill in a generalized sense (that is, so that commonly used prefixes and suffixes can be used with any appropriate root word). Competence in identifying common affixes makes it possible for pupils to extend their printed word vocabulary in such a way that the meaning of many new words can be readily estimated within sentence contexts.

Enabling skills.

Subskill 18-1. Same as Skill 17, Infer Word Meaning from Context.

Subskill 18-2. Same as Skill 13, Printed Word Knowledge.

Skill 19. Printed Word Knowledge-3. The objective is: Given printed text constituting a sample of 1800-3000 orally familiar words, reads them aloud without hesitation, and states a relevant associated phrase (i.e., a rough "definition"). This skill is simply a continuation of Skill 13, and extends the range of words to be recognized in print. Again it is the case that the size of this vocabulary varies with the reading program in use, and the range indicated may be considered a low estimate.

Enabling skills.

Subskill 19-1. Same as Skill 13, Printed Word Knowledge-2.

Subskill 19-2. Same as Skill 7, Printed Word Knowledge-1.

Skill 20. Identify Thematic Content. The objective is: Given printed paragraphs, composed of sentences of moderate complexity, answers questions which paraphrase the content, and require inferences, concerning such matters

as "main idea," "author's intent," "probable cause," "predicted events," etc. There are many tests which assess components of reading comprehension in these various ways. As shown by the high intercorrelations of responses to different question types, they do not measure separate skills. In general, the questions should not only be paraphrases of the text, but should also require inferences about events or relations which are not directly stated.

Tests of reading comprehension often are made up entirely of items of this sort. While learning exercises which incorporate inferential processing must surely be valuable, the dependence upon this kind of item to assess reading comprehension seems overdone. In particular, the following points may be noted:

(1) as a matter of content validity, it is not clear that understanding printed text (such as newspaper stories) actually involves such activities as "identifying the main idea";

(2) success in answering such questions is in fact highly related to the prose density of the reading passages employed, rather than to the type of questions asked;

(3) inference questions appear to provide only an indirect measure of what many scholars identify as a critical feature of reading comprehension, namely, "predicting what is to come before it is read" (cf. Smith, 1976).

Accordingly, Skill 20 is included with some rational misgivings. However, its highly frequent occurrence in reading comprehension tests justifies its inclusion as a "skill" in the sense here described. Actually, the test items themselves are believed to assess a set of strategies of question-

answering, on which some practice may profitably be given with the aim of improving students' test-taking performance.

Subskill 20-1. Same as Skill 19, Printed Word Knowledge.

Subskill 20-2. Same as Skill 18, Word Meaning-Affixes.

Subskill 20-3. Same as Skill 17, Infer Word Meaning from Context.

Stage 3. Learning from Reading (Grade 4 on)

At this stage, the pupil should be what may be called a "journeyman reader." Perhaps the best single indicator of this degree of competence would be the student's ability to read aloud an article from a publication like Reader's Digest, without hesitation, and to state in "own words" what each paragraph says. This is a description of what may be expected at the beginning of this stage of reading.

Provided the skills previously described have been mastered, it does not appear possible to "diagnose" any further deficiencies, except in very unusual cases. Although tests of reading comprehension continue to distinguish such tasks as "identifying cause and effect," "identifying the author's intent," and others of this general sort, these cannot be considered to be separate skills. Low scoring on one or another of these tasks is not diagnostic of anything except reading comprehension in general (unless it be general intelligence, with which reading comprehension scores are highly correlated).

What is happening at this stage is that the reader, so long as he continues to read new and varied passages, is gaining additional facility in the activity of reading, while at the same time he gains new knowledge of the world. Increasing competence in reading, at this stage, is most readily measured by readers' ability to comprehend printed prose characterized by increasing complexity or syntactic density. Although few "scales" of complexity

of prose writing are available, the contrast between the prose of Samuel Clemens and that of Henry James illustrates the meaning of this concept. The capstone skill, then, is really a complex of skills and strategies that the learner has acquired through his previous instruction and reading practice. It is called simply, Reading Comprehension.

Skill 21. Reading Comprehension. The objective is: Given passages of printed text with words removed (for example, every fifth word), completes an acceptable meaning of the text by supplying these words. Alternatively, "identifying" can be used for "supplying," making a variant form of the test with a multiple-choice format. This, of course, is a description of a "cloze" test of reading comprehension, which seems to many investigators of reading to be the best criterion measure of comprehension. At any rate, the rational justification for the cloze-type tests of reading comprehension would appear to greatly excel the rationale for such tasks as "inferring author's intent," or "identifying the mood of a passage." It is hoped that the cloze format will gain wider acceptance and usage in the future.

A systematic beginning for diagnosis can be achieved as indicated in the following descriptions.

Subskill 21-1. Same as Skill 20, Identify Thematic Content. This test will indicate whether the comprehension of total passages, and the application of inference strategies to text, are being accomplished satisfactorily. These skills have their enabling skills in 21-3 (Identify Literal Content, Skill 15), which is related in turn to Skill 14, Answer Factual Questions.

Subskill 21-2. Same as Printed Word Knowledge, Skill 19. Word knowledge is a second major strand of competence that may be involved in reading comprehension. Inadequate performance means that the learner has not learned to recognize sufficient numbers of printed words. If this is so, his comprehension is being slowed because he has to puzzle over words, rather than recognizing them immediately. Further diagnosis can proceed to Skills 13, and 7, in order.

Subskill 21-3. Same as Skill 15, Identify Literal Content. An inadequate score on this skill implies the probability of trouble with "semantic encoding." That is, the difficulty the student is having is essentially one of matching meanings in paraphrased forms of sentences. Further diagnosis can be accomplished by using tests of enabling skills beginning with Skill 14, Answer Factual Questions, and proceeding to Skill 8, Identify Printed Sentences.

Subskill 21-4. Same as Skill 16, Facile Oral Reading. The diagnostic possibilities of oral reading have led to the development of a number of specific tests such as those of Spache (1972), Durrell (1055), and others. A review of these diagnostic principles is given by Spache (1976). Errors in oral reading may indicate inadequacies in decoding skills (Skill 12), in printed word knowledge (Skill 19), or in the structuring of sentences (Skill 15). Further diagnosis may be accomplished by using tests of these enabling skills.

Sequences of Enabling Skills

As implied by the previous section, the performance of reading comprehension may be seen to be composed of a number of component skills which

are enabling. By means of a diagnostic testing procedures, the needs for instruction in these enabling skills may be revealed. It would be a desirable step to analyze reading comprehension in the manner of a learning hierarchy (Gagnē and Briggs, 1974), so that specific prerequisite relationships among enabling skills could be identified. Such an analysis would appear to involve complex relationships among the subordinate skills. Although the task analysis proposed by Resnick and Beck (1976) may provide a useful starting point, the construction of a learning hierarchy has not been attempted.

Figure 1 depicts a sequence of skills in reading in the form which is sometimes called an instructional map. The map identifies what appear to be reasonable teaching sequences of benchmark skills for each grade, K-3. These skills are arranged in the three strands which have previously been described, namely, decoding, word meaning, and sentence/text processing. (Abbreviated phrases are used in the figure to describe the skills; numbers correspond with those in the previous section of this report).

Within each of the three strands, the arrangement shown represents a hypothesized sequence for instruction. In general, the skills lower in the diagram need to be taught before the "higher" ones to which they are connected. The special status of oral reading is worthy of note. Tests of oral reading are considered to be of key importance in diagnosis, since they are able to reveal a diversity of prescriptions for instruction (cf. Spache, 1976). Their multiple interrelations with subordinate skills are impossible to represent adequately in a two-dimensional diagram; consequently, two circles are used to represent this single activity at each level. Viewed

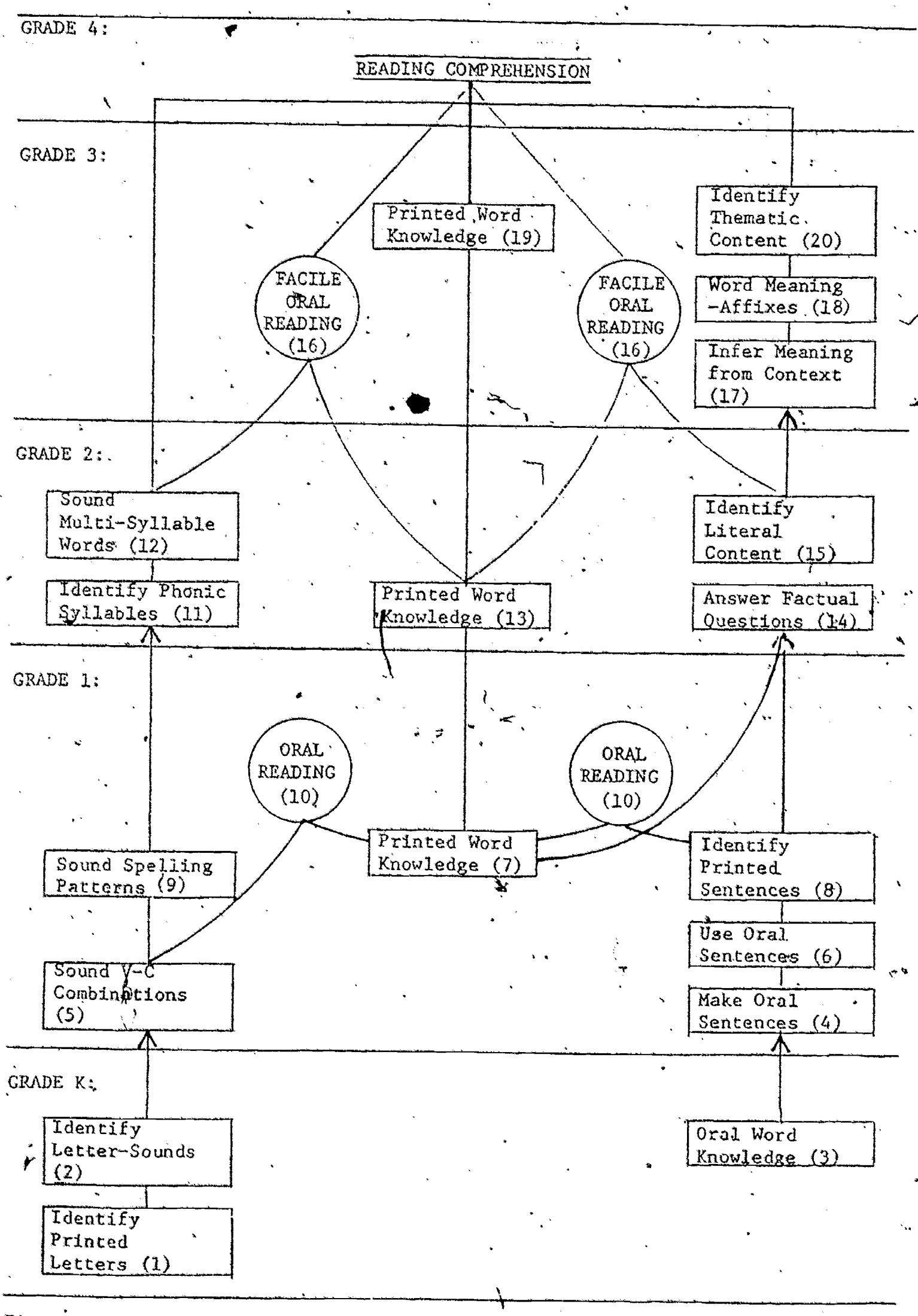

Figure 1: Sequences of prerequisite skills in reading.

from the standpoint of instruction, it would normally be expected that practice in oral reading be a frequently recurring part of a reading program, and that frequent probes of reading competence be made in this mode.

The benchmark skills which are shown for each grade level are suggested as objectives to be included in a placement test (for the following grade) and also as minimal exit skills for the grade level in which they occur. The entire set of tests required for diagnosis at each grade level is not represented in this figure - many additional enabling skills are described in the previous section of this report. In addition, individual teachers may find other tests of enabling skills (contained in many diagnostic test packages) useful for finer analyses of needed instruction in the particular pupils whom they teach. The framework of benchmark skills shown in Figure 1 should make possible systematic prescriptions for instruction, whether or not such additonal tests are employed.

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