FOCUS ON EXCEPTIONAL CHILDREN

Spelling Research and Practice:
A Unified Approach

Steve Graham and Lamoine Miller

While spelling is neither the most important nor the least important aspect in writing, it is a crucial ingredient. Good spellers are able to express their thoughts on paper without unnecessary interruptions. Poor spellers are hampered in their ability to communicate freely through the written word. For a grocery list or personal reminders, accurate spelling is not essential, but material to be read by others should be free from the distraction of misspelled words.

Spelling is a traditional element of the elementary school curriculum, where considerable amount of time and energy are devoted to its mastery. Moreover, the general public often associates correct spelling with educational attainment, accuracy, neatness and cultivation, while the inability to spell is frequently linked with illiteracy (Personkee & Yee, 1971). Because the public and the educational community emphasize the importance of spelling achievement, the inability to spell may adversely affect an individual's educational and occupational status.

Unfortunately, many school-age children have difficulty learning to spell. The majority of students who are presently labeled handicapped exhibit spelling problems. Learning disabilities, mental retardation, emotional disturbance, and crippling and other health impairments may unfavorably affect spelling performance (Kyte, 1949; Miller & Graham, 1979). These realizations are compounded by an ever present and growing concern that our schools' overall spelling achievement is lower than it was 30 or 40 years ago (E. Horn, 1960).

Unsatisfactory spelling progress may be attributed, in part, to inadequate contemporary classroom instruction, poorly designed commercial materials, and the absence of spelling programs based on research findings. Further, contemporary classroom instruction rarely accounts for individual student differences. On Monday each student usually is introduced to the same list of spelling words. On Tuesday the teacher administers a pretest, and on Wednesday each student uses the

spelling words in sentences. Thursday's activities are designed to teach phonic skills and/or words missed on Tuesday's pretest. A final posttest is administered on Friday. This pattern or one that is strikingly similar is common in most American classrooms (Rowell, 1972). Although some students may profit from such large-group oriented instruction, many others do not. Children do not learn at the same rate, nor do they encounter the same difficulties in learning to spell.

The actual spelling procedures used in many classrooms are influenced heavily by commercial materials that form the foundation of most spelling programs. Spelling texts ordinarily offer a set pattern of instruction with little variety (Dieterich, 1973); and a recent survey revealed that direct teacher involvement is limited in most spelling books (Jobes, 1975).

"Teacher proof" materials with little diversity might be acceptable if the content were appropriate. Regrettably, this is not the case. For instance, in a study evaluating current commercial materials, Cohen (1969) identified five major categories of activities or exercises common in sixth grade spellers, and their aggregate percentage of emphasis by text, as follows: phonics (33.6%), affixes and inflectional endings (23.7%), language arts skills (20.2%), word meaning (14.6%), and syllabication (7.9%). Cohen found that some of the exercises actually deterred learning while others were merely ineffectual. As late as 1976, spelling books still contained a large proportion of inappropriate activities

(Graves, 1976). Results of the Cohen and Graves studies point to the need for reevaluation of spelling texts and their contents.

As disturbing as it may seem, evidence reveals that instructional practices in spelling are influenced more by habit than by research results. In a study involving 1,289 second through sixth grade elementary teachers, Fitzsimmons and Loomer (1977) found that teachers seldom use research-supported practices in their classroom. The insignificant role of research in spelling *instruction* is paradoxical, since spelling is one of the most thoroughly researched areas in the language arts. Many earlier findings are substantiated by more recent research (Allred, 1977). Even so, improvement in spelling programs is not commensurate with research efforts. While existing evidence will continue to be refined and expanded, it is basically useless if it is not applied.

If handicapped and nonhandicapped students are to receive adequate spelling instruction, teachers need viable alternatives to current spelling texts and instructional practices. The building materials for such options are presently available — A solid research foundation already exists, and the Elementary and Secondary Education Act created a landslide of spelling techniques, approaches, and materials (Fitzsimmons & Loomer, 1977). In designing appropriate alternatives, the present day educator runs the risk of choosing ineffectual activities and/or neglecting the current research foundation. Therefore, spelling instruction should be teacher directed, should contain a variety of relevant instructional options, and should be based on a foundation of research evidence.

THE DEFINITION AND PROCESS OF SPELLING

Unless one first knows the nature of what one is trying to teach, a discussion of methodology and organization seems pointless. Yet, much of the literature evidences this characteristic, mainly because most definitions do not capture the full essence of the spelling process. For example, Hanna, Hodges, and Hanna (1971) define spelling as the "process of encoding, or of rendering spoken words into written symbols" (p. 264). Similarly, Brueckner and Bond (1955) define spelling as the "ability to produce in written or oral form the correct letter arrangement of words" (p. 346). Neither of these definitions is complete. Spelling is not based upon a single act but requires a variety of skills euphemistically called "spelling." *For the purpose of this article, spelling is defined as the ability to recognize, recall, reproduce, or obtain orally or in written form the correct sequence of letters in words.*

Spelling begins with a felt need to spell a word (see Figure 1). This need may be in response to a written assignment, a request for aid, a spelling test, and so forth. Ordinarily, students are able to immediately write or recall spellings of words appropriate to their level of learning with little or no conscious effort. Occasionally, students are able to spell words correctly but first need to use intrinsic or extrinsic strategies to determine if a word is (a) a homonym (semantic information), (b) capitalized (syntactic information), and/or (c) hyphenated (human or written aid). Once they have this information, they immediately recall the word from memory.

If the correct spelling of a word is uncertain or unknown to a student, there are two main resources upon which to draw. One, a person could use *intrinsic strate-*

gies to determine a "possible" correct sequence of sound-symbol associations. These strategies include direct phonemic spelling, the generate-and-test process, and morphemic information (Simon & Simon, 1973). In direct phonemic spelling, students apply their knowledge of phoneme-letter associations and phonemic rules to produce a phonetic spelling of the word. This strategy is successful for only about one of every two words (Hanna, Hanna, Hodges, & Rudorf, 1966). The generate-and-test process is a trial-and-error procedure in which the student produces alternative possible spellings and tries to recognize the correct written response. Although this procedure is superior to direct phonemic spelling (Simon & Simon, 1973), it, too, is prone to error. Each of these two strategies may be supplemented by the use of morphemic information. Auditory recog-
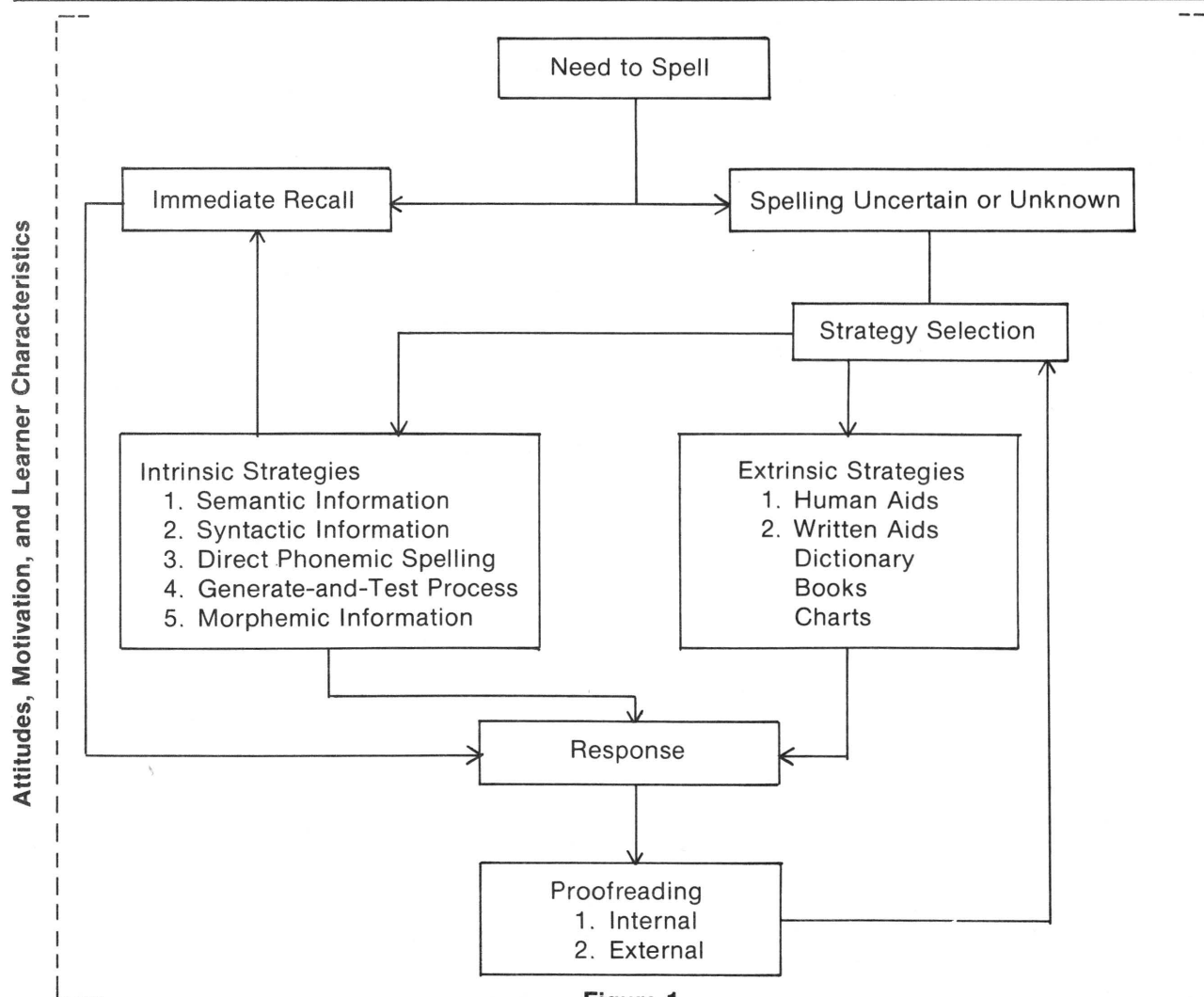

Figure 1
The Spelling Process

nition of a morphemic element (e.g., *and*) provides spelling information that may be used to derive the correct spelling of words containing that component.

If intrinsic strategies prove inadequate for a particular situation, a student may refer to *extrinsic resources* such as aid from a teacher or friend, the dictionary, spelling books, and so forth. Sometimes, intrinsic and extrinsic strategies are used concurrently; e.g., a student may generate a possible spelling and then use a dictionary to check that response.

A student does not need to be able to recall the full spelling of a word in order to recognize whether or not it is spelled correctly. The process involved in this phenomena is commonly referred to as "proofreading." Once a response is generated either through immediate recall or a spelling strategy, the student may scan the word in an effort to see if it is spelled accurately. Although this procedure is not exact, it often uncovers incorrect spellings. After a suspected error is detected, the student might use extrinsic or intrinsic resources to determine whether or not the response is correct.

In defining the spelling process, a distinction must be made between the mature speller and the beginning speller. A mature speller can immediately spell nearly all of the words encountered on usual writing tasks and can appropriately select intrinsic or extrinsic strategies to correctly spell words that are unknown. The beginning speller, in contrast, has a limited spelling vocabulary and does not have access to a wide variety of spelling skills. Research suggests that students in the primary grades progress through several stages in the development of spelling strategies (Beers, 1974; Beers & Henderson, 1977; Gentry, 1977). First, students tend to omit essential sound features of the word (e.g., vowels). At the next level, spelling is primarily phonetic. During the third stage, attributes of the English orthographic system begin to appear. At the fourth stage, students recognize and recall the correct lexical representation of the word.

THE SPELLING CURRICULUM

The preceding discussion points out that spelling is multifaceted and requires mastery of a variety of skills. Learning to spell is not an easy task. The speller faces many difficulties including, but not limited to, foreign spellings, 26 letters representing 44 sounds, silent letters, variant and invariant sounds, and 300 different letter combinations for 17 vowel sounds (Allred, 1977). To illustrate, the word "circumference" can be spelled over *396,000,000* different ways phonetically (Peters, 1970). In addition to orthographic barriers,

the English language contains the largest vocabulary in the world, with approximately 490,000 words plus another 300,000 technical terms.

In planning a spelling curriculum, then, what should be taught and which skills should receive primary consideration? With respect to the latter concern, an enduring controversy regards the regularity of the English language. There are two major theories (and consequent curricular applications) based on divergent views regarding the consistency of English orthography.

Synthetic Alphabet/Whole Word Approach

One theory holds that English orthography is irrational and consequently difficult to master. This view is responsible for the two distinct methodological interpretations that (a) instruction should be based on a special synthetic alphabet (e.g., Initial Teaching Alphabet); and (b) whole words should form the core of the spelling curriculum.

At present, however, special synthetic alphabets are not a viable or pragmatic approach to spelling instruction because they require an additional step in the learning process — transition from the synthetic alphabet to English orthography. Upon cursory examination, the whole word approach also appears to be impractical. The average person uses perhaps 10,000 words freely and can recognize another 30,000 to 40,000 (Monson, 1975). Mentally handicapped students are not likely to be able to memorize this many spelling words.

Fortunately, to be an effective speller, a student does not have to be able to correctly spell all the words in his or her listening, reading, and writing vocabulary. Studies by E. Horn (1926), Fitzgerald (1951a), T. Horn and Otto (1954), and Rinsland (1945) indicate that a basic spelling vocabulary of 2,800 to 3,000 well-selected words should form the core of the spelling program. To illustrate, 8 words account for 18% of all the words children use in their writing, 100 words for 50%, 1,000 words for 89%, 2,000 words for 95%, 3,000 words for 97%, and 4,000 words for 99% (Hillerich, 1977; E. Horn, 1926); Otto & McMenemy, 1966; Rinsland, 1945). After several hundred words have been learned, the law of diminishing returns begins to operate (Allred, 1977). To require a student to master a spelling vocabulary significantly larger than 3,000 words is out of harmony with research.

Phonemic Approach

The second theory views English orthography as a patterned but incomplete system. Supporters of this

theory suggest that the systematic properties of orthography should be used in spelling instruction. This view stresses the application of phonics and spelling rules as a means of developing spelling abilities.

There are several notable challenges to the application of phonemic skills. Those objecting to phonics instruction point out that: (a) most sounds are spelled many ways; (b) most letters spell many sounds; (c) more than one-third of the words in the dictionary have more than one accepted pronunciation, more than half contain silent letters, and about a sixth contain double letters; (d) unstressed syllables are difficult to spell; and (e) children do not understand word-attack principles (E. Horn, 1960). In addition, detractors indicate that most misspelled words are phonemically correct (Hahn, 1960; Tovey, 1978) and that intensive phonics instruction is not superior to non-phonics methods (Bedell & Nelson, 1954; Grottenthaler, 1970; Hahn, 1964; Ibeling, 1961; Personkee & Yee, 1971; Warren, 1970).

Those who favor phonics instruction indicate some fairly consistent characteristics of English spelling (Horn, 1960). For example, Hanna et al. (1966) reported that 49 percent of 17,000 words could be spelled correctly using phoneme-grapheme correspondences and another 37 percent could be spelled with only one error. Furthermore, a large body of research supports the contention that intensive phonics instruction creates greater gains in spelling than non-phonics approaches (Baker, 1977; Block, 1972; Dunwell; 1972; Gold, 1976; K. Russell, 1954; Thompson, 1977). Some evidence shows that children learn the more essential phonic principles whether or not formal instruction in phonics is offered (Schwartz & Doehring, 1977; Templin, 1954). In summary, both theory and evidence suggest that phonics instruction may be of some benefit in learning to spell.

Spelling Rules

The issue surrounding use of spelling rules is more clear-cut: Only those rules, with few exceptions, that apply to a large number of words should be taught; and teaching generalizations without regard to utility of the spelling rule is wasteful. For instance, Clymer (1963) found that only 18 of 45 generalizations are useful. Other researchers have suggested that even fewer spelling rules should be taught (Cook, 1912; E. Horn, 1954a, King, 1932). Supporting the statement that spelling rules should be unambiguous, Archer (1930) and Personkee and Yee (1971) indicated that the use of spelling rules may lead to errors because students often misapply generalizations they do not clearly under-

stand. Spelling rules, as a whole, are deemed not very useful in improving overall spelling achievement (Davis, 1969; King, 1932; Turner, 1912; Warren, 1969).

Returning to the question of what should be taught and which skills should receive primary consideration, we suggest that a basic vocabulary of 2,000 to 3,000 words should be supplemented by direct phonics instruction accompanied by limited use of spelling rules. In addition, the student should be able to detect spelling errors (i.e., proofread)[1] and be able to effectively use a dictionary.

Figure 2 presents a spelling scope and sequence divided into eight levels. Each level represents approximately one school year. Depending upon the student's characteristics and the severity of the handicapping condition, the rate of progression through the curriculum may be either decelerated or accelerated. In any case, the fundamental sequence of skills should remain intact.

Within the program, the spelling vocabulary is arranged from the most frequently used words to those used least often. Because of the significant overlap between children's and adult's writing vocabularies (Fitzgerald, 1951b; E. Horn, 1954b), the curriculum is comprised of the words most common to both — attending to the student's future as well as present spelling needs.

Initially, any of a number of lists of "most common words" (e.g., Dolch, Fry, etc.) can be taught. For example, Fitzgerald (1951b) identified a permanently useful core of 449 words for beginners and the retarded, which account for more than 76 percent of the words used in children's and adult's writing. Once the vocabulary in the selected list of "most common words" is learned, additional words are taken from one of the following sources: Fitzgerald (1951b), Hillerich (1976), E. Horn (1926), or Rinsland (1945). Before teaching any word from these sources, the teacher should make sure that the word is already part of the student's listening and reading vocabulary.

Since correct spelling in place of phonetic misspelling is a major goal in spelling instruction, only essential phonic skills and spelling rules are incorporated into the curriculum. The nucleus of the phonics program includes base words, prefixes, suffixes, and consonant, consonant blend, digraph, and vowel sound-symbol associations. Spelling rules are limited to the following:

— Proper nouns and most adjectives formed from proper nouns begin with capital letters.

[1] Research indicates that proofreading skills can be improved and that proofreading programs lead to gains in spelling achievement (Frasch, 1965; McElwee; 1974; Oswalt, 1961; Personkee & Knight, 1967; Valmont, 1972).
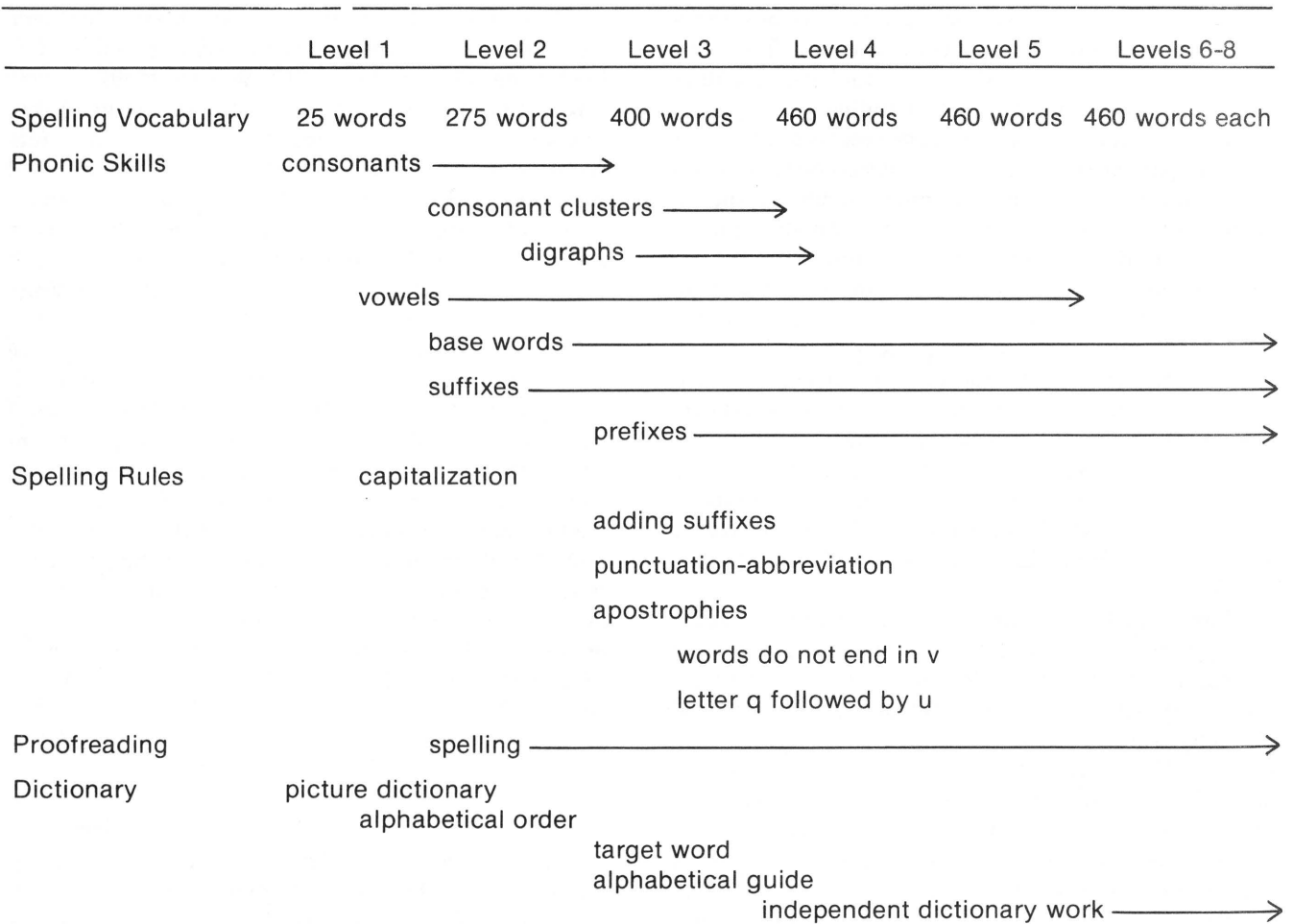
	Level 1	Level 2	Level 3	Level 4	Level 5	Levels 6-8
Spelling Vocabulary	25 words	275 words	400 words	460 words	460 words	460 words each
Phonic Skills	consonants ⟶					
		consonant clusters ⟶				
			digraphs ⟶			
		vowels ⟶				
		base words ⟶				
		suffixes ⟶				
			prefixes ⟶			
Spelling Rules	capitalization					
			adding suffixes			
			punctuation-abbreviation			
			apostrophies			
			words do not end in v			
			letter q followed by u			
Proofreading	spelling ⟶					
Dictionary	picture dictionary					
	alphabetical order					
			target word			
			alphabetical guide			
			independent dictionary work ⟶			

Figure 2
Spelling Scope and Sequence

— Rules for adding suffixes (changing y to i, dropping final silent e, doubling the final consonant).
— The use of periods in writing abbreviations.
— The use of the apostrophe to show possession.
— The letter q is followed by u in common English words.
— English words do not end in v.

Dictionary work includes picture dictionaries, alphabetizing skills, word location skills, independent dictionary skills, and pronunciation skills. Proofreading involves detecting and correcting errors.

THE SPELLING MODEL

The major objectives of the spelling model as presented here are to:

1. Help students become proficient at standard spelling.
2. Maintain and promote spelling growth.
3. Teach students how to spell words they use in writing.
4. Help students develop effective methods of studying new words.

5. Promote students' use of the dictionary in learning to spell unknown words.
6. Develop in students a spelling conscience — a desire to spell words correctly.

To meet these goals, an effective remedial spelling program must be based on a number of well-defined principles. First, spelling instruction must be direct and not incidental. Studies by Allen and Ager (1965) and Knoell and Harris (1952) found that spelling is an independent skill and that transfer effects from other areas of the curriculum should not be expected. Although students learn many words outside of specific spelling instruction, this incidental learning is applied primarily by the good spellers (Gilbert & Gilbert, 1944; Tyler, 1939). Thus, for poor spellers, basing remedial spelling procedures on reading or other language arts activities may not be justified.

A second assumption inherent in the model presented here is that spelling instruction must be individualized. A wide range of spelling ability and achievement is apparent at every grade level (Ayer, 1951; E. Horn, 1960). The skills and needs of each student are different. Teachers who fail to account for individual differences often rely on hodge-podge procedures that produce hodge-podge results (Schell, 1975). For example, Guiler and Lease (1942) found that pupils at all levels of spelling ability benefited from a program based on individual needs and made substantially greater gains than students receiving instruction formulated on a conventional group basis.

Third, effective remedial spelling instruction depends upon continuous evaluation. Assessment data are used to determine if progress is adequate or if alterations in the instructional plan are necessary. Teachers who do not monitor a student's spelling program carefully cannot adapt instruction to meet individual needs.

Fourth, successful remediation is based upon flexible use of a wide variety of techniques and methods. Regrettably, no one best method or technique has emerged for teaching spelling (Blair, 1975). Likewise, what works with one student may not work with another. Because handicapped students exhibit a diverse range of problems, teachers require access to an extensive assortment of methodological techniques.

Fifth, the effectiveness of spelling instruction is heavily dependent upon the attitudes of both student and teacher. Students must be shown that spelling is personally important to them. Desirable attitudes in students can be encouraged by teachers who (a) provide students with efficient learning techniques, (b) present words of high social utility, (c) emphasize student progress, (d) use a variety of interesting activities and games, (e) structure tasks so that the student can succeed, and (f) limit instruction to relevant and critical skills. Spelling, however, is one of the subjects teachers most dislike to teach (E. Horn, 1960). This is unfortunate, because teachers may be the key variable in students' learning to spell (Blair, 1975).

Assessment

Public Law 94-142 requires that an Individualized Education Program (IEP) must be developed for each student receiving special services. The IEP is a management tool designed to facilitate the process of instructional delivery. While the scope of this article does not allow an in-depth discussion of the IEP, it is necessary to discuss procedures for establishing the present level of performance and evaluating student progress. Readers interested in a systematic planning model for development of the IEP are referred to Hudson and Graham (1978).

The procedure through which the present level of performance is established has to vary from one student to another. Nonetheless, a suitable analysis should consider the student's (a) readiness for formal instruction, (b) general spelling level, (c) spelling errors, and (d) proofreading, phonic, and dictionary skills. This information is used to plan the student's educational program (i.e., annual goals and short-term objectives).

Before describing specific assessment techniques, a few general principles should be noted:

1. A variety of both standardized and informal procedures should be used.
2. Since writing is the most common response mode in spelling, written tests are preferable to oral tests.
3. Spelling behavior should be assessed in both isolation and written context.
4. Recall tests are more difficult than recognition tests.
5. Results of various assessments should not be considered as discrete, separate entities but should be analyzed for possible relationships.

Readiness

Before direct spelling instruction is planned, the student must be intellectually able and emotionally willing to learn. Students who have not attained sufficient mental maturity and linguistic experiences are scarcely ready to participate in a formal spelling program. How

is spelling readiness assessed? Read, Allred, and Baird (1972) recommend that students should be able to: (a) name and write all the letters of the alphabet, (b) copy words correctly, (c) write their names from memory, (d) enunciate words clearly, (e) recognize common letter-sound combinations, (f) write a few words from memory, and (g) demonstrate an interest in spelling. If students do not meet these criteria, they should take part in activities (see Hildreth, 1962) aimed at developing spelling readiness.

Overall Achievement

Various standardized tests are available for measuring a student's general spelling level. Among these instruments are the *Iowa Spelling Scale* (Ashbaugh, 1921), the *Phonovisual Diagnostic Test* (Schoolfield & Timberlake, 1949), the *Ayer Standard Spelling Test* (Ayer, 1950), the *Seven-Plus Assessment* (Lambert, 1964), and the *Kelvin Measurement of Spelling Ability* (Fleming, 1933). Each of these tests examines recall processes and requires that students write words that have been presented orally, used in a sentence, and presented orally again.

Several informal methods are also available for measuring spelling ability at the survey level. Word lists developed by Kottmeyer (1959) and a coefficient of misspelling both yield a general estimate of spelling achievement. Using the latter, the teacher obtains from the student a written specimen containing approximately 200 words. The total number of misspelled words is divided by the number of words written. The resulting coefficient then is compared to suggested grade-level norms (Courtis, 1919; Brueckner & Bond, 1955).

Spelling Errors

Errors that students commit on spelling tests and other written work provide an indication of the nature of the student's spelling difficulties. Error analysis reveals the student's error tendencies and enables the teacher to detect excessive or infrequent types of errors. Most spelling errors are of a phonetic nature (Spache, 1940), occur in the middle of the word (Jensen, 1962; Kooi, Schutz, & Baker, 1965), and involve a single phoneme (Gates, 1937; Hildreth, 1962). A few words do not account for a disproportionate number of errors (Swenson & Caldwell, 1948).

Only a few standardized tests specifically analyze spelling errors. The *Spelling Errors Test* (Spache, 1955) calls for a response to 120 dictated words and permits the examiner to classify the responses according to 13 common error types. The *Larsen-Hammill Test of Written Spelling* (Larsen & Hammill, 1976) is comprised of two subtests — Predictable Words and Unpredictable Words. The test yields a comparative analysis of the student's ability to spell phonetic and nonphonetic words.

Proofreading

Standardized proofreading tests include the *Every Pupil Achievement Test* (Robinson, 1970), the *California Achievement Tests* (Tiegs & Clark, 1970), the *SRA Achievement Series* (Thorpe, Lefever, & Haslund, 1963), the *Northumberland Standardized Test: II Enlish* (Burt 1925), and the *Metropolitan Achievement Tests* (Durost, Evans, Leake, Bowman, Cosgrove, & Reed, 1970). Each of these tests measures recognition processes.

Proofreading skills should be examined in both isolation and context. Some informal proofreading measures are to:

1. Present alternative spellings of a word and have the student select the correct spelling.
2. Introduce different words and have the student decide which words are spelled correctly or incorrectly.
3. Mark words in a sentence and have the student indicate which, if any, of the marked words are misspelled.
4. Have the student mark and correct misspelled words in a sentence, paragraph, etc.

Phonics

In evaluating phonic skills, the analysis should involve sound-symbol associations and not symbol-sound associations. Two standardized tests that meet this requirement are the *Gates-Russell Spelling Diagnostic Test* (Gates & Russell, 1937) and the Spelling subtests of the *Durrell Analysis of Reading Difficulty* (Durrell, 1937). Informal tests corresponding to this principle include the *Diagnostic Test* (Teachers Manual, 1956) and the *St. Louis Spelling Test* (Kottmeyer, 1959).

Dictionary Skills and Spelling Rules

There is a lack of formalized instruments for examining dictionary skills and spelling rules. Therefore, these

elements must be examined informally. Dictionary skills can be assessed by directly observing the student locate unknown spelling words in the dictionary. The student's knowledge of spelling rules can be examined by having each student spell nonsense and real words that require the use of a specific rule (see Brueckner & Bond, 1955).

Evaluating Student Progress

Annual goals often are evaluated by administering a standardized test at the beginning of the year and again at the end of the year. This procedure, however, is generally not appropriate for measuring student performance on specific short-term objectives. Daily work products, observation over time, number of trials per lesson, criterion-referenced testing, and applied behavioral analysis are means by which short-term objectives can be measured (see Hersen & Barlow, 1976; Hudson & Graham, 1978; Moran, 1975). For instance, the student's spelling tests and words misspelled on writing assignments may be kept in a spelling folder. Periodically, the teacher should analyze the contents of the folder to determine spelling mastery, error patterns, phonemic skills, etc. This information then may be used to determine if the student is making adequate progress in meeting specific short-term objectives.

Methodological Procedures

The outline in Figure 3 illustrates the basic components of the spelling model. Spelling practices supported by research and those not supported by research are capsulized in Figure 4. Only practices supported by empirical data were incorporated into the model here. Readers interested in a more thorough discussion of research supported practices are referred to Fitzsimmons and Loomer (1977).

Spelling Vocabulary

The beginning step in teaching spelling vocabulary is to determine which words to teach. Many students already know a few words in each lesson (E. Horn, 1960; Swenson & Caldwell, 1948). The student's learning, therefore, should be directed toward words he or she cannot spell correctly. This focuses spelling instruction on acquisition rather than maintenance.

Use of the test-study method indicates which words require study. Through this technique, the student first is given a pretest to determine which words in a particular lesson are unknown to him or her. The test administrator pronounces each word, uses it in an oral sentence, and pronounces it again (Brody, 1944; Cook, 1932; Foran, 1934; Nisbet, 1939). After unknown words

Spelling Vocabulary	Supplemental Instruction
1. Test-Study-Test Procedure 2. Word Study Technique 3. Corrected Test Method 4. Distribution of Words 5. Review	1. Proofreading 2. Phonemic Skills 3. Dictionary Skills 4. Auditory and Visual Imagery

Interest and Motivation

1. Reinforcement
2. Games
3. Supplemental Aids
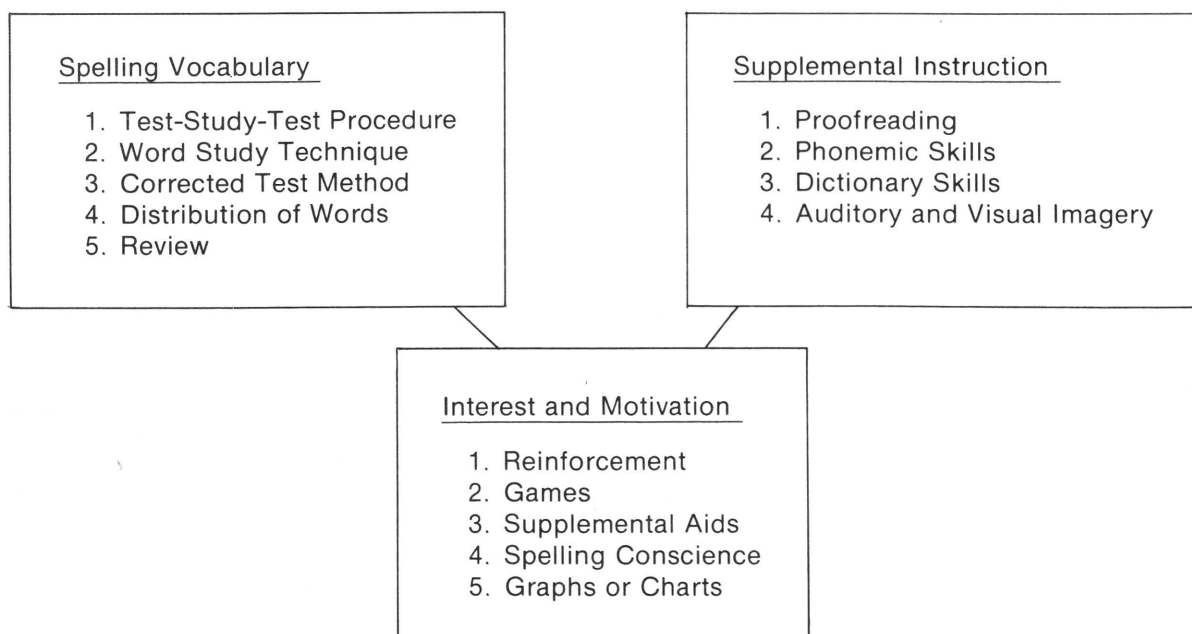4. Spelling Conscience
5. Graphs or Charts

Figure 3
Components of the Spelling Model

PROCEDURES SUPPORTED BY RESEARCH

1. The test-study-test method is superior to the study-test method (Blanchard, 1944; C. Edwards, 1931; Fitzgerald, 1953; Gates, 1931; Hibler, 1957; T. Horn, 1946; Kingsley, 1923; Montgomery, 1957; Subik, 1951; Yee, 1969).

2. Learning spelling words by a synthetic approach is a better technique than learning words by syllables (T. Horn, 1947, 1969; Humphry, 1954).

3. It is more efficient to present words for study in a list or column form than in sentence or paragraph form (M. Edwards, 1953; Hawley & Gallup, 1922; E. Horn, 1944, 1954b; McKee, 1924; Strickland, 1951; Winch, 1916).

4. The single most important factor in learning to spell is the student correcting his or her own spelling test under the teacher's direction (Beseler, 1953; Christine & Hollingsworth, 1966; T. Horn, 1946; Louis, 1950; Schoephoerster, 1962; Thomas, 1954; Tyson, 1953).

5. Spelling games stimulate student interest (Fitzgerald, 1951a; E. Horn, 1960; T. Horn 1969).

6. Sixty to 75 minutes per week should be allotted to spelling instruction (E. Horn, 1960; T. Horn, 1947; Larson, 1945; Rieth, Axelrod, Anderson, Hathaway, Wood, & Fitzgerald, 1972).

PROCEDURES NOT SUPPORTED BY RESEARCH

1. Writing spelling words in the air is a valuable aid in learning new words (Petty & Green, 1968).

2. Studying the "hard spots" in words improves spelling ability (Masters, 1927; Mendenhall, 1930; Rosemeier, 1965; Tireman, 1927).

3. Students should devise their own method for studying spelling words (Fitzgerald, 1951a; E. Horn, 1944, 1954b, 1960; T. Horn, 1969).

4. Student interest in spelling is secondary to rewards received for achievement in spelling (Columba, 1926; Diserens & Vaughn, 1931; Forlano, 1936; E. Horn, 1960, 1967; D. Russell, 1937; Thorndike, 1935).

5. Writing words several times ensures spelling retention (Abbott, 1909; Petty & Green, 1968; E. Horn, 1967).

Figure 4
Research on Spelling Procedures

are identified, the student studies them. The pretest then is given a second time and the teacher notes which words, if any, are spelled incorrectly. Misspelled words are incorporated into future lessons.

Words to be studied should be presented in a list or column form. This is advantageous because it focuses specific attention upon each and every word. If the student does not know the meaning of the word or if the word is a homonym, the teacher may wish to embed the word within a sentence.

Each student must be taught an efficient, systematic technique to study unknown spelling words. Letting students devise their own individual methods is not advisable. An effective word study method can be established by developing a worksheet that specifies the study pattern in a step-by-step manner. Initially, the student uses the worksheet, under teacher supervision, to learn each unknown spelling word. Gradually, the worksheet is faded out as the study method becomes internalized.

An effective word study method concentrates on the whole word and requires careful pronunciation, visual imagery, auditory and/or kinesthetic reinforcement, and systematic recall (i.e., distributed learning and overlearning). Figure 5 presents a variety of word study techniques that, for the most part, meet these stipulations. These authors suggest that the student be taught either the Fitzgerald Method or one of the two methods by E. Horn. If these techniques prove ineffective for a particular student, the Gilstrap Method may be more suitable. Or, a teacher may wish to use one of the other word study techniques (e.g., Fernald Method, Cover-and-Write Method, etc.) with a specific student.

Fitzgerald Method (Fitzgerald, 1951a)

1. Look at the word carefully.
2. Say the word.
3. With eyes closed, visualize the word.
4. Cover the word and then write it.
5. Check the spelling.
6. If the word is misspelled, repeat steps 1-5.

Horn Method 1 (E. Horn, 1919)

1. Look at the word and say it to yourself.
2. Close your eyes and visualize the word.
3. Check to see if you were right. (If not, begin at step 1).
4 Cover the word and write it.
5. Check to see if you were right. (If not, begin at step 1).
6. Repeat steps 4 and 5 two more times.

Horn Method 2 (E. Horn, 1954c)

1. Pronounce each word carefully.
2. Look carefully at each part of the word as you pronounce it.
3. Say the letters in sequence.
4. Attempt to recall how the word looks, then spell the word.
5. Check this attempt to recall.
6. Write the word.
7. Check this spelling attempt.
8. Repeat the above steps if necessary.

Visual-Vocal Method (Westerman, 1971)

1. Say word.
2. Spell word orally.
3. Say word again.
4. Spell word from memory four times correctly.

Gilstrap Method (Gilstrap, 1962)

1. Look at the word and say it softly. If it has more than one part, say it again, part by part, looking at each part as you say it.
2. Look at the letters and say each one. If the word has more than one part, say the letters part by part.
3. Write the word without looking at the book.

Fernald Method Modified

1. Make a model of the word with a crayon, grease pencil, or magic marker, saying the word as you write it.
2. Check the accuracy of the model.
3. Trace over the model with your index finger, saying the word at the same time.
4. Repeat step 3 five times.
5. Copy the word three times correctly.
6. Copy the word three times from memory correctly.

Cover-and-Write Method

1. Look at word. Say it.
2. Write word two times.
3. Cover and write one time.
4. Check work.
5. Write word two times.
6. Cover and write one time.
7. Check work.
8. Write word three times.
9. Cover and write one time.
10. Check work.

References to Other Techniques

Aho, 1967	Hill & Martinis, 1973
Bartholome, 1977	Phillips, 1975
Clanton, 1977	Stowitschek & Jobes, 1977
Glusker, 1967	

Figure 5
Word Study Techniques

The single most effective technique in learning to spell is followed when the student (under the teacher's direction) corrects his or her own errors immediately after taking a spelling test. The corrected-test method allows the student to (a) see which words are difficult, (b) locate the part of the word that is troublesome, and (c) correct errors. Examples of this technique include the following:

1. Teacher spells word orally. Student corrects word in writing (Hibler, 1957).
2. Teacher spells word, emphasizing each letter as student points to each letter as it is pronounced (Allred, 1977).
3. Teacher spells word and student marks through each incorrect letter and writes correct letter above it (Hall, 1964).

4. Teacher writes word correctly next to misspelled word. Student writes word correctly (Kauffman, Hallahan, Haas, Brame, & Boren, 1978).
5. Teacher writes exact imitation of student's error and then writes word correctly. Student writes word correctly (Kauffman et. al., 1978).

The prevailing practice of presenting all the spelling words at the beginning of the week is not suitable for handicapped students. To present and test a few words daily is preferable. Also, the teacher should intersperse known and unknown words in each spelling test (Neef, Iwata, & Page, 1977). Each newly mastered spelling word should be tested a few days after the initial presentation and then periodically throughout the school year. This helps ensure spelling maintenance and growth.

Many students evidence difficulty in identifying misspelled words, but this skill can be improved through practice (Valmont, 1972). A good way to begin is to provide time to proofread written assignments and stress the importance of spelling consciousness. Proofreading skills may be improved through exercises similar to the following:

1. Have the student locate incorrect spellings in a short list of words (Hardin, Bernstein, & Shands, 1978).
2. Provide practice in detecting words that don't look right in other students' writing assignments (Rudman, 1973).
3. List the number of misspelled words in a composition and have the student search for and correct errors (Valmont, 1972).
4. Underline words that may be misspelled and have the student check their accuracy (Personkee & Yee, 1971).

Phonic skills can be developed through application of a wide variety of activities (see Hanna et. al., 1971; Hillerich, 1976). Specifically, these skills can be taught inductively, in isolation or context, and/or by association. Each of these techniques should be used selectively with handicapped students in teaching sound-symbol associations, prefixes, suffixes, and base words. To illustrate, a student initially might learn to associate a particular sound (e.g., /t/) with its corresponding symbol (t). Later, the student might be asked to write the appropriate beginning letter (t) in response to a dictated word (tap).

E. Horn (1960) indicates that spelling rules should be (a) taught inductively rather than deductively, and (b) developed in connection with words to which the rule applies. Moreover, only one rule should be taught at a time. Both the positive and negative aspects of the rule should be highlighted. The rule also should be systematically reviewed and applied.

An important element in spelling instruction is dictionary training. Students need to know how to use the dictionary for many purposes. Dictionary training activities may include alphabetizing words, approximating the location of a given word in the dictionary, using guide words, dividing words into syllables, and so forth.

Students also may require training in visual and auditory imagery. To be effective spellers, students must be able to easily and correctly perceive the words to be spelled. Hudson and Toler (1949), Mason (1961), and Radaker (1963) indicate that auditory and/or visual training may result in improved spelling achievement.

Interest and Motivation

Positive attitudes are crucial to spelling improvement. As most teachers know, effectiveness of instructional procedures depends greatly upon the student's interest and motivation. Regardless of the quality of the program, progress will be restricted if the student is not motivated to spell words correctly or is not interested in spelling. Since attitudes and methodology are intrinsically bound together, techniques designed to foster positive attitudes should be an integral part of the total spelling program.

How does the teacher promote positive attitudes toward spelling? First, the student must develop a desire to spell words correctly. Spelling consciousness can be stimulated by: (a) showing the student the importance of correct spelling in practical and social situations; (b) providing the student with an efficient method of word study; (c) limiting the spelling vocabulary to words most likely needed in the student's present and near future writing endeavors; (d) encouraging pride in correctly spelled papers; and (e) requiring study of only those words that the student is unable to spell.

Of the sources available to the teacher for promoting positive attitudes, probably none other is as important as the student's awareness of progress or success (E. Horn, 1960). Many handicapped students experience considerable frustration in learning to spell. To minimize the effects of persistent failure, the teacher should dramatize each student success using charts, graphs, verbal praise, and so on. The experience of noting progress may be motivating for both student and teacher.

Whenever possible, the student should maintain the chart or graph himself or herself (Wallace & Kauffman, 1973). For example, the student might first record on a graph the number of words spelled correctly on the

pretest, and later add to the graph the number of words spelled correctly on the posttest. This exercise provides a visual representation of the student's progress in learning how to spell new words.

For some handicapped students, the dramatization of success is not, in and of itself, enough to overcome undesirable attitudes. The teacher may have to build into the spelling program rewards for good performance. Studies by Benowitz and Busse (1970, 1976), Benowitz and Rosenfeld (1973), and Thompson and Galloway (1970) reveal that material incentives are successful in improving spelling achievement. If material incentives are used, they should be combined with verbal praise. As the student's attitudes and achievement improve, the material incentives should be slowly phased out. Motivation inspired by intrinsic reinforcement is ultimately preferable to material rewards.

Games and special devices are also often suggested as a means of improving spelling attitudes. Research evidence indicates that certain games may be of some benefit (E. Horn, 1960). Nevertheless, they should supplement rather than supplant direct instruction. Teachers either may develop games of their own or locate games developed by others (see Fitzgerald, 1951a; Hildreth, 1962). Games like hangman, crossword puzzles, scrambled words, spelling bingo, and spelling baseball are enjoyable to most students.

ADDITIONAL CONSIDERATIONS

In designing an appropriate spelling program, the proposed methods, materials, reinforcers, and daily activities should be realistic with respect to the instructional time available. It is recommended that 60 to 75 minutes per week be allotted to spelling instruction. Although a few students may require additional time, most students do not benefit from extended periods of study in spelling (Fitzsimmons & Loomer, 1977).

The time allocated for daily spelling instruction can be supplemented and maximized by the advantageous use of tutors or paraprofessionals. Research indicates that tutors are effective in improving tutees' spelling progress (Bandle, 1949; Lovitt, 1975; Stillberger, 1950).

Additionally, the instructional process may be enhanced by enlisting the cooperation of the student's parents. The involvement of parents as "equal partners" in making decisions related to their handicapped child is implicit in PL 94-142 (Hudson & Graham, 1978).

Of final concern is the effect of dialect upon spelling achievement. Many handicapped students are members of minority groups that converse in a dialect other than "standard" English. Although students from minority groups may spell things the way they hear or say them, under no circumstances should the teacher attempt to change their dialect with the hope that acquisition of standard English will improve their spelling achievement. Instead, it is recommended that students pronounce words affected by their dialect and carefully note how they are spelled.

CONCLUSION

The model presented in this article is intended to provide teachers with a valid, flexible, and systematic guide to spelling instruction. The authors hope that teachers will adapt the model to their own particular students and situations. For instance, in a mainstreaming program, each of the participating teachers might bear responsibility for specific aspects of the spelling curricula. In this way, the efforts of both special and regular educators are coordinated and the likelihood of spelling success maximized.

Finally, spelling instruction in the present program is direct and not incidental. Nontheless, spelling is an integral part of the writing process and not a discrete, separate skill. The language arts are highly interrelated, and students need a lot of practice using their spelling skills in context (i.e., writing).

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