The Role of the Speech-Language Pathologist in Improving Decoding Skills

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ABSTRACT

In this article, we consider the processes and knowledge involved in decoding and present some instructional guidelines and suggestions for teaching students the skills necessary for proficient and fluent word reading. The roles and responsibilities of speech-language pathologists (SLPs) are also considered. It may have been enough several years ago for SLPs to focus solely on early literacy skills and phonological awareness. This is not the case today. SLPs not only need to collaborate with teachers to develop a comprehensive approach to literacy, but also should be providing direct, explicit instruction of decoding skills for students with language and learning disabilities.

KEYWORDS: Decoding, word recognition, phoneme awareness, sound-letter correspondences, letter identification, speech-language pathologists' role in literacy

Learning Outcomes: As a result of this activity, the reader will be able to (1) discuss the role of the SLP in improving decoding skills, and (2) give examples of activities and programs to improve letter naming, phoneme awareness, sound-letter correspondences, word attack skills, and fluency.

Decoding is one of the key areas addressed in the American Speech-Language-Hearing Association's position statement on the roles and responsibilities of SLPs related to reading and writing.[1] SLPs can play many different roles in facilitating decoding skills of students with and without communication disorders, including prevention, identification, assessment, intervention, monitoring, and follow-up. SLPs can also play important roles in curriculum and instruction, advocacy, leadership, and continuing education. The exact roles will depend on the policies and administrative structures of the work setting (e.g., school, clinic, private practice, hospital). There are three general roles SLPs might assume:

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(1) planning team member, (2) direct service provider, or (3) collaborative consultant (indirect service provider). In some cases, an SLP might assume all of these roles. For example, an SLP might provide direct services for phonological awareness, consult with teachers on the best way to improve spelling and writing, and be a part of the planning team in designing a language arts curriculum.

In-depth knowledge of language (phonology, semantics, syntax, morphology) enables SLPs to fulfill these roles and responsibilities. Academic programs in our field provide this information in courses dealing with speech-language development and child language disorders. To facilitate literacy development, SLPs also need information about reading, writing, spelling, and higher-level language use. Some of this information is provided in academic programs and is available in textbooks, journals, and in-service education programs on the Internet.

The specific aim of this article is to provide SLPs with guidance for facilitating the decoding or word recognition processes involved in reading. Reading, as most people are aware, consists of two components, decoding and comprehension.[2] Decoding refers to the word recognition processes that transform print to words; comprehension involves the processes used to assign meaning to words, sentences, and texts. Proficient decoding requires a number of skills and knowledge sources, including rapid letter recognition, phoneme awareness, knowledge of sound-letter correspondences, and word attack skills. In this article, we will consider instructional practices and the role SLPs might play in targeting each of these areas. Also considered are ways to develop fluent and automatic word recognition skills.

LETTER IDENTIFICATION

To recognize words in English, one must be able to identify letters and associate these letters to sounds in the language. Children from high-literacy homes are exposed to letters as soon as they are born. Their homes are filled with literacy artifacts (books, magazines, newspapers, pens, pencils, crayons) and literacy-oriented toys, such as magnetic letters, blocks with letters, games with words and pictures, and so forth. One of the first songs children learn to sing is the alphabet song. The importance of letter identification for early reading has been overshadowed in recent years by the attention that phonological awareness has received. Many would be surprised to know that knowledge of letter names predicts early reading ability as well as, if not better than, measures of phonological awareness.[3] A well-established letter name makes it easier to construct the associations between letters and sounds that are so crucial for effortless and accurate word recognition.

Letter naming involves learning to associate the shape of a particular letter with its name. Adams[4] has noted that letter naming must be overlearned so that processing resources can be devoted to word recognition and comprehension. Most reading programs include an instructional component to teach letter recognition. Teachers often introduce letters in some systematic fashion, usually using the order of the alphabet and presenting capital letters before lowercase letters. Each week or two throughout the school year may be devoted to a letter, and students can make notebooks and perform activities involving the letter of the week.

Some reading programs (e.g., Open Court[5]) also follow alphabetical order. The advantage of teaching letters in this order is that most children are familiar with the alphabet song, and it allows teachers and parents to use the various ABC books that are popular with young children. The disadvantage is that the alphabet order is not related to letter frequency or to the order in which sound-letter correspondences are introduced.

Some programs use a combination of letter frequency and sound-letter transparency (i.e., continuant sounds introduced before obstruent or stop sounds). *Road to the Code*,[6] for example, begins with the letters a, m, f, t, i, s, and r. All but /t/ are continuant sounds. *Optimize*,[7] in contrast, introduces letters based on frequency and visual factors. Visually similar letters are not introduced together. The first

letters introduced are m, p, f, c, t, s, and d. Many SLPs may be unfamiliar with this program, but it is being adopted by more and more school systems because it targets students who are having difficulty acquiring early literacy skills. Like the other programs, it focuses on phoneme awareness, letter recognition, and sound-letter correspondences. It also includes reading actual stories. One of the unique aspects of the program is that it uses many principles of Direct Instruction Reading[8] to teach specific skills. Letters and letter-sound correspondences are introduced in 126 lessons that contain detailed scripts and teacher information. The lessons are divided into 21 cycles, six lessons per cycle. Each lesson contains a review of previously learned sounds or words. The program ends with students reading words in context.

Some programs, such as the Lindamood Phoneme Sequencing Program for Reading, Spelling, and Speech (LiPs)[9] and Reading Mastery,[10] focus on the sounds associated with letters rather than letter identification. LiPs suggests using another program, Bell's Seeing Stars,[11] to teach letter recognition.

In terms of actually teaching letter identification skills, multisensory approaches are generally advocated.[12] Students trace letters, feel them, write them, recognize them from an array of other letters, listen to their names, and say the names out loud. These activities should be repeated until letter naming is automatic. Some enjoyable activities include fishing for letters, identifying letters in books or worksheets, using letter-shaped cookie cutters with Playdough, and tracing letters in shaving cream, cornmeal, or sand.

Role of the SLP

SLPs should play a direct role in teaching letter identification skills, especially with preschool children who have speech-language delays. Speech therapy, in particular, provides an excellent opportunity to teach letter identification. The letters corresponding to the target sounds should be routinely present during speech activities. For example, letters can be placed on or above blocks or train cars that are used to indicate word position. When working on particular sounds, a large card with the letter can be placed on the table or the wall. In addition to using various sound cues (hissing, snake sound, lip poppers, etc.), SLPs also can refer to the letter name (e.g., "Let's make a good /t/ sound.").

Language therapy also provides an excellent opportunity to introduce letter names. Many students with language disorders have difficulty with grammatical morphemes, such as auxiliary and copula BE, third person "-s," and past tense. SLPs may use various activities to target these forms that may be accompanied by words or letters to represent the forms. For example, an "is" card is presented, and the student is asked to name the letters in the word.

Many SLPs are involved in preschool classroom settings, in which teaching letter names may be one of the learning goals for the year. In these settings, the SLP may work closely with the classroom teacher to plan and implement various language and literacy goals, such as building vocabulary through storybook activities.

PHONEME AWARENESS AND SOUND-LETTER CORRESPONDENCES

Knowledge of sound-letter correspondences is generally agreed to be the most fundamental task facing the beginning reader. Constructing associations between sounds and letters is not as straightforward as it seems, however, because it is not enough merely to memorize the sounds that go with each letter. Children must realize that the sounds associated with letters are not just any sounds—they are the sounds that they use to talk. In other words, children need to associate letters to the particular set of sounds (i.e., phonemes) that compose their spoken language. The insight that letters are associated with the sounds of the language one speaks has been called the "alphabetic insight."[2,4]

To construct associations between sounds and letters, children must know, at some level of awareness, that words consist of discrete

sounds. This is why measures of phoneme awareness are such good predictors of early reading ability[13,14] and why instructional efforts that improve phoneme awareness often lead to higher levels of reading performance.[15,16]

Phoneme Awareness

Phoneme awareness is an integral component of many early reading programs. There also are several programs specifically designed to teach phoneme awareness skills (e.g., Road to the Code[6]). The most common phoneme awareness activities are listed below.

1. Phoneme identity—identify common sound in different words (e.g., "What sound is the same in *bike, boy,* and *bell?*")
2. Phoneme categorization—identify the word with the odd sound in a sequence of three or four words (e.g., "Which word does not belong: *bus, bun, rug?*")
3. Phoneme isolation—identify individual sounds in words (e.g., "What's the first sound in *cat?*")
4. Phoneme blending—combine sequence of sounds to form a word (e.g., "What word is /s/ /i/ /t/?")
5. Phoneme segmentation—break a word into sounds by tapping out or counting sounds or by pronouncing and positioning a marker for each sound (e.g., "How many sounds are there in *ship?*")
6. Phoneme deletion—identify the word that remains after a specified phoneme is removed (e.g., "What is *smile* without the /s/?")

Based on the performance of young typically developing children, phoneme identity and categorization tasks are easier than phoneme isolation, blending, segmentation, and deletion tasks. In the following list, some guidelines are provided to teach phoneme awareness. These guidelines have been drawn from the recent report of the National Reading Panel,[17] which conducted an evidence-based assessment of the research literature on reading instruction.

1. Focusing instruction on one or two skills—blending and segmentation—is more effective for teaching phoneme awareness than focusing on multiple skills.
2. Teaching phoneme awareness with accompanying letters is more effective than teaching phoneme awareness without letters.
3. The most effective way to teach phoneme awareness is in small groups rather than in individual or classroom instruction.
4. Training programs that ranged from 5 to 18 hours were more effective than shorter or longer ones.
5. Phoneme awareness instruction should be tailored to the individual student's level of literacy development.

The report[17] also stresses that teaching phoneme awareness by itself is not sufficient. One of the major findings from the National Reading Panel analysis was the need to use letters in teaching phoneme awareness skills to help students make the connection between graphemes and phonemes.[17] In addition, it is important for teachers to show students how this knowledge is related to reading and writing.

There are many programs designed to teach phoneme awareness. Road to the Code[6] is one that is relatively inexpensive and easy to use. The program integrates phoneme awareness with letter name and sound instruction. After an introduction about phoneme awareness and its relationship with reading, there are 44 detailed individual lessons and information about how to construct materials. Each 15- to 20-minute lesson contains three activities: Say It-and-Move It, Letter Name and Sound Instruction, and Phonological Awareness Practice.

The LiPs[9] is another program that should be familiar to most SLPs. It is a more comprehensive program than is Road to the Code because it teaches children to associate sounds with letters and to read words with varying syllabic complexity. The program consists of five levels: (1) setting the climate for learning, (2) identifying and classifying speech sounds, (3) simple syllables and words (e.g., VC, CV, and CVC), (4) complex syllables and words (e.g., VCC, CCV, and CVCC), and (5) multi-

syllabic patterns and words. The program can be used for individual, small group, or whole class instruction. Two paths are provided for the teacher: a horizontal path and a vertical path. The horizontal path suggests mastery of each level prior to progressing to the next; the vertical path integrates several levels at once. The program uses a multisensory approach to help children integrate how they hear, see, and feel sounds.

Many activities can be used to teach phoneme awareness skills. A recent article by Yopp and Yopp[18] provides an excellent list of play-oriented activities that focus on rhyme, syllables, onset-rime units, and phonemes. Many of the activities are multisensory in nature, combining auditory, visual, and kinesthetic cues.

ROLE OF THE SLP

SLPs are probably most comfortable providing direct services for phoneme awareness because of the knowledge they have about phonetics and phonology and the recent emphasis phoneme awareness has received in the profession. Phoneme awareness activities should be an integral part of the therapy SLPs provide for preschool and school-age students with speech and language delays. Such activities will improve reading ability. In addition, some recent evidence suggests that an integrated intervention that combines phoneme awareness training with speech therapy improves speech production at least as well as therapy focused solely on speech production.[19]

Because of their knowledge of phonology and phoneme awareness, SLPs should be involved in the identification, assessment, intervention, monitoring, and follow-up of students with deficient phoneme awareness abilities. SLPs should be integral members of the planning team in providing services to these students. They also should assume a collaborative consultative role with kindergarten and first-grade teachers to help identify students with limited phoneme awareness skills. SLPs can also play a role in the education of students without disabilities by showing teachers how to incorporate phoneme awareness activities into their regular language arts curriculum. Phoneme awareness is an area in which SLPs can make a convincing case for their involvement in literacy development for students with and without speech and language disorders.

Sound-Letter Correspondences

Many programs that target phoneme awareness and letter identification also include instruction of sound-letter correspondences. In fact, one of the basic principles of phoneme awareness instruction is the inclusion of instruction in the connections between graphemes and phonemes. This and other principles for teaching sound-letter correspondences are listed below.

1. Phoneme awareness activities should be coordinated with sound-letter correspondence activities. As students learn that the word "sat" contains three sounds, they should be shown the letters that correspond to these sounds.
2. Continuant sounds such as /s/ should be taught before stop or obstruent sounds because they can be prolonged and separated from the ensuing vowel.
3. Letters that are associated with only one sound (e.g., s, m, n, r, f) should be taught before letters that are associated with more than one sound (e.g., c, g, h).
4. Short vowels (e.g., /a/ in bat, /i/ in hit, /e/ in egg) should be taught before long vowels.
5. Letters that have similar visual and auditory characteristics should be taught separately (e.g., p and b).
6. High-frequency letters should be introduced prior to low-frequency letters.

Sound-letter correspondences often are introduced with alphabet cards depicting pictures that begin with the sound the letters make. For example, the letter "m" may accompany a picture of a monkey. *Open Court* and *Road to the Code* both follow this model. Alliteration is often used to familiarize students with particular sounds. *Road to the Code* uses a jingle to emphasize the sounds of each

letter (e.g., "Big boy bouncing on a bed."). *Open Court* also uses alliterations in sentences and short stories to promote the sound-letter correspondences.

Some programs (e.g., *Optimize*) provide various cues to teach letter sounds. For example, the cue for the letter "s" is that the tip of the tongue touches behind the top teeth, and it makes a snake sound. With the *LiPS,* students first learn the feel of sounds and then are taught to associate the feel of the sounds with their corresponding letters. Sounds are introduced with pictures that illustrate the mouth's movements. Labels are provided for specific sounds (e.g., /p/ and /b/ are "Lip Poppers") so students can become aware of contrasts between sounds. Most reading programs use a variety of games (e.g., Concentration, Sound Bingo, Go Fish) to introduce and review sounds.

ROLE OF THE SLP

SLPs may be less comfortable teaching sound-letter correspondences than they are teaching letter identification and phoneme awareness. Although their knowledge of phonetics and phonology gives them the background to assume a role in this area, most have little familiarity with formal reading programs and instructional methods used by teachers to impart this knowledge. There is, of course, nothing to prevent an SLP from becoming familiar with these materials. The second author of this article, for example, completed her Clinical Fellowship Year as a reading specialist in a local school. In other words, SLPs have the knowledge base necessary to evaluate and adapt reading programs to the needs of individual students. They can share this knowledge with teachers and provide some assistance in helping the students who are having difficulty keeping pace with the curriculum. Teachers would find an in-service in phonetics particularly useful; information about the different phonetic (place, voice, manner) characteristics of sounds can help teachers understand why many students have difficulty learning certain sound-letter correspondences and also provide them with a better understanding of the spelling errors that students make.

WORD ATTACK SKILLS AND SIGHT WORD READING

Phoneme awareness, letter identification, and knowledge of sound-letter correspondences are all crucial components in learning to read, but having this knowledge does not by itself make a child a proficient reader. Children must be able to use this knowledge to read new words. There are two basic ways to read a novel word: (1) by sounding out and blending and (2) by analogy to a known word.[20,21] Phonological information is important for both approaches. Knowledge of sound-letter correspondences and blending skills are obviously crucial for sounding out a word. To read by analogy, a child must recognize that the rime segment (i.e., "-at" in "c-at") of the unfamiliar word is identical to the one in a familiar word. The rime segment must then be blended with the new onset. Reading by analogy requires the phoneme awareness skills of onset-rime segmentation and blending.

Proficient decoding not only requires good word attack skills, but also necessitates effortless and accurate decoding. With all the emphasis on phoneme awareness and decoding/phonics approaches in recent years, we sometimes forget that proficient reading does not involve sounding out words. Instead, the proficient reader relies primarily on visual, orthographic information rather than on phonological information. If you do not believe this, think about how you read the last sentence. Did you sound out the particular words in the sentence? Imagine sounding out a word like proficient, p-r-o-f-i-c-i-e-n-t. Sounding out words, letter by letter or even syllable by syllable, would make reading an incredibly tedious endeavor. Accurate, effortless word recognition requires the ability to use a direct visual route with limited phonological mediation to access semantic memory and word meaning.

Most reading thus occurs from memory. Often referred to as sight word reading, this is the most efficient way to read because it involves minimal phonological decoding. To recognize words visually, children must learn to associate a particular sequence of letters with a

word and then remember this association when they encounter the word again.

Reading programs differ somewhat in how they teach word attack skills and sight word reading. In the *LiPs,* students begin reading real words and pseudowords in simple syllables and words after they demonstrate the ability to perform phoneme awareness tasks and show knowledge of sound-letter correspondences. Some spelling conventions are introduced at this point (e.g., final "e"). Students finish the program by reading and writing multisyllabic patterns and words. Although actual reading is suggested, reading materials are not provided in the program.

Most reading programs teach students to recognize irregular words by sight. These words often are introduced as "tricky" words that do not follow the rules of word attack. *Optimize,* for example, introduces eight frequent irregular words (e.g., *the, was, said*) that are termed "dizzy" words. After students are taught a word, they are given phrases, sentences, and decodable texts that include the word. *LiPs* presents irregular words as words that do not "play fair." Students are given a series of flashcards with irregular words to sort into three piles depending on how fast they read them: *sloths, rabbits,* and *cheetahs.*

One of the most effective programs to improve word reading skills of students with reading difficulties has been developed by Lovett and colleagues.[16,22] Lovett found that combining two approaches, the Phonological Analysis and Blending/Direct Instruction Program(PHAB-DI) with the Word Identification Strategy Training Program (WIST), was more effective than each program by itself.[23] The PHAB-DI program consists of lessons from the Direct Instruction (DT) programs developed by Engelmann and colleagues.[24,25] These programs train phonological analysis, blending, and sound-letter association skills in the context of word recognition and decoding instruction. The specific DI programs used are Reading MasteryI/II Fast Cycle and the Corrective Reading Programs.

The WIST teaches students how to use and monitor four metacognitive strategies to improve word recognition ability. The four strategies are (1) identifying words by analogy, (2) seeking the part of the word you know, (3) attempting variable vowel pronunciations, and (4) "peeling off" prefixes and suffixes in multisyllabic words. For example, in seeking the part students know or "SPY," they are taught to look for small words or word parts that they know, such as "bun" and "dan" when attempting to decode "abundance." The peeling off strategy reduces multisyllabic words to a smaller and more manageable root word by identifying and segmenting prefixes and affixes. To be successful in applying these strategies, students are first taught to recognize a corpus of 120 high-frequency English spelling patterns using a sight word approach.[22]

In the last few years, Lovett and her colleagues have integrated the instructional components of PHAB-DI and WIST into one program, now called PHAST (for Phonological and Strategy Training). Another difference in the newer program is in how individual strategies are introduced, taught, and integrated. Importantly, PHAST is appropriate to the needs of average and precocious readers in the early elementary years, not just students with reading disabilities. Lesson formats, materials, activities, and worksheets have been designed to address individual skills and abilities of each student.[23]

Role of the SLP

Few SLPs would view word attack skills and sight word reading as part of their scope of practice. As mentioned earlier, most SLPs have limited knowledge of basal reading programs and remedial programs such as the ones described in this section. As with the other aspects of decoding, SLPs' knowledge of phonetics, phonology, and other aspects of language makes them well-qualified to provide assistance in teaching word attack and sight word reading skills. As SLPs work closely with teachers, they may realize that they actually have substantial knowledge of remedial reading programs, although they do not have the

same level of instructional experiences. For example, most SLPs have experience in teaching metacognitive strategies such as those in the *WIST* program. Coupled with their expertise in morphology, SLPs should have little difficulty teaching students to use the *WIST* strategies, even though they have had no previous experience using these specific techniques to teach reading.

FLUENCY

It is generally assumed that reading fluency is the natural result of word recognition proficiency. Reading fluency is defined, however, as the ability to read with speed and accuracy, as well as with proper expression. Proficient word recognition should be sufficient to read quickly and accurately, but it is not sufficient to read with proper expression. To have proper expression (i.e., know which words to emphasize and when to pause), there must be some sensitivity to grammatical units (syntax) and punctuation cues. Reading fluency thus requires some application of language knowledge that is part of the comprehension process rather than the word recognition process.[17]

There are two major instructional approaches to facilitate reading fluency. The first approach includes procedures that emphasize repeated oral reading practice or guided repeated oral reading. Some specific techniques include radio reading (reading with a "radio" voice), paired reading (reading together with someone), assisted reading (being helped to read), echo reading (shadowing), and so forth. Based on a review of studies that investigated the effectiveness of these techniques, the National Reading Panel found that repeated oral reading and receiving guidance or feedback from peers, parents, or teachers were effective techniques to improve reading skills.[17] The second approach focuses on increasing the amount of independent or recreational reading engaged in by children. This approach was not found to be effective in improving reading fluency.[17]

In a recent article on reading fluency, Rasinski[26] provided some specific suggestions for improving reading fluency. Improving word recognition efficiency will obviously have a direct effect on reading fluency. Helping students develop greater sensitivity to syntactic and discourse features of the text also will aid fluency. An important part of improving reading fluency is choosing appropriate texts for students to read. Rasinski has obtained substantial success using poetry to improve reading fluency. Poetry allows for repeated readings in a very natural and purposeful way. Readers' Theatre is another natural way to promote repeated reading. Students do not rely on props or costumes, just their voices, as they face the audience with their scripts in hand.

Role of the SLP

Reading fluency has been described as the most neglected reading skill.[17] Teachers are often frustrated when students appear to have all the basic skills and knowledge to read but still struggle. Understanding why a student is having difficulty learning to decode quickly and accurately requires knowledge of the component processes of decoding as well as experience unraveling cause and effect relationships. SLPs are well-qualified in both of these areas. They also have considerable experience in the language- and fluency-based activities that are used to improve reading fluency. Echo reading and choral reading (reading together with someone), for example, are often used by SLPs to facilitate fluency in children and adults who stutter. As reading fluency receives more attention in the upcoming years, SLPs should be ready to play a prominent role in its instruction.

CONCLUSION

In this article, we have considered the processes and knowledge involved in decoding and presented some instructional guidelines and suggestions to teach the various skills required to become proficient decoders (i.e., readers). It is no longer sufficient for SLPs to focus solely on phoneme awareness and early literacy skills. SLPs need to embrace a more comprehensive approach to literacy that in-

volves becoming knowledgeable about all aspects of decoding and comprehension. With their knowledge of language and clinical expertise in differential diagnosis and treatment, SLPs can play an important role in improving the literacy skills of students with and without communication problems.

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ARTICLE TWO
Self-Assessment Questions

1. Which is not a program to teach phonological awareness?
   A. Road to the Code
   B. Optimize
   C. Lips
   D. PHAB-DI
   E. WIST

2. What skill is not required for proficient decoding?
   A. rapid letter recognition
   B. comprehension monitoring
   C. phoneme awareness
   D. word attack
   E. sound-letter correspondences

3. The alphabetic insight refers to
   A. knowledge that letters are visual
   B. knowledge that texts consist of letters
   C. knowledge that letters are different than sounds
   D. knowledge that letters are associated with the sounds of a language
   E. knowledge that consonants are different than vowels are

4. There are two basic ways to sound out a word:
   A. by sounding out and blending
   B. by sounding out and by using word attack skills
   C. by blending and sight word reading
   D. by sight word reading and analogy
   E. by sounding out and blending and by analogy to a known word

5. Which is not one of the four WIST strategies?
   A. using analogy
   B. sounding out words
   C. seeking the part of the word you know
   D. peeling off prefixes
   E. attempting variable vowel pronunciations