Teaching Reading

As in Chapter 3, we begin with teacher contributions and share examples from Beverly Wolf’s teaching experience, as classroom teacher or principal, to illustrate some of the knowledge gained from teaching reading to children with dyslexia and/or oral and written language learning disability (OWL LD). We then consider the knowledge generated by research on effective reading instruction for these children.

TEACHER CONTRIBUTIONS

To children, reading is magic. It is a means of delivering the thoughts and language of one person into the language and mind of another. Those children who are resistant or appear to be unmotivated to read typically have been defeated in their efforts by daily failure in their attempts to learn the magic of reading. These children, however, usually long desperately to achieve the ability to read. In Beverly Wolf’s classroom, 7-year-old Travis said, “The Christmas presents don’t matter. I just need to know how to read.” Third grader Raizel said, “My dream is to be a reader.”

According to Masland (1979), the magic of reading stems from the complexity of processes that must be mastered so that reading proceeds without effort. These processes include 1) applying the alphabetic principle for grapheme–phoneme correspondences to decoding words that are completely or partially decodable; 2) relating spelling, sound, and meaning in recognizing, pronouncing, and understanding words; and 3) using the structures of oral and written language to comprehend text. Teaching these processes draws on multiple units or levels of language:

1. Phonology: speech sounds (phonemes)
2. Syntax: phrase and sentence structure
3. Semantics: phrase and sentence meaning
4. Discourse structure: organization of connected sentences
5. Pragmatics: use of language for communication acts

Until children are reading without effort, each reading lesson should consist of teacher-directed, explicit, systematic instruction in 1) phonological awareness; 2) applying phonics (alphabetic principle) and morphology to decoding; 3) applying background knowledge already learned to unfamiliar words or concepts in material to be read (activating prior knowledge); 4) both oral reading and silent
reading, with appropriate instructional materials; 5) activities to develop oral reading fluency; and 6) reading comprehension. The goal of this instruction is also to develop independent readers who can apply what they learn to reading on their own.

**A Brief Review: Organizational Principles and Instructional Materials**

To assist teachers in implementing specialized instruction for students with dyslexia or OWL LD in the general education classroom, the following sections review the organizational principles introduced in Chapter 2 and provide an overview of supplementary instructional materials.

**Grouping for Differentiated Instruction** Informal reading inventories are administered to determine instructional levels for word reading on a list without context clues and for word reading in the context of a passage. For example, the Qualitative Reading Inventory–4, 4th Edition (QRI-4; Leslie & Caldwell, 2005) is often used for this purpose. Teachers should also consider reading test scores that may be available and students’ response to daily reading instruction in forming instructional groups to teach at each student’s instructional level.

As one student the authors worked with said, “It’s just plain stupid to try to teach a kid to read in a book that’s too hard.” Sigmund Freud said it in a different way: “Understanding becomes impossible once reading becomes difficult” (Henry, 1999, p. 17). If students cannot recognize at least 90% of the words, they are unlikely to understand what they read (Juel, 1994) or make progress (Honig, 1996). Without challenge, students are also unlikely to grow in reading. If a book is too easy, students are likely not to make progress. A perceptive teacher provides balance between ease and challenge. The key to effective reading instruction is to match the level of instruction to a student’s reading level with the right book at a level that challenges the student but is accessible. When students are grouped by instructional level for daily reading instruction, teachers are able to work with text materials as close to each child’s reading level as possible and still provide instruction most suited to that group’s needs. Small-group instruction will also allow each child more opportunities to respond when the teacher provides feedback. It will also provide the teacher with opportunities for informal daily evaluation of response to instruction that leads to more refined instruction.

By forming three or four instructional groups, the teacher can provide differentiated instruction based on both instructional levels and the nature of instruction needed. For example, one group could be devoted to students with dyslexia or OWL LD, who will require more explicit, systematic, and sustained instruction in various reading skills than classmates in other groups. In forming instructional groups, the teacher needs to take into account whether students’ problems are mainly in decoding unknown words, automatic word reading, and/or in reading comprehension and whether students will need extra instruction and practice in one or more of these skills. The teacher also needs to consider whether students’ problems are mainly in oral reading fluency, silent reading fluency, or both. Some children need to read out loud and hear what they are reading in order to comprehend, whereas others comprehend better if they can read silently. Another factor to consider is whether children in early grades are masking problems in reading
comprehension by drawing on background knowledge to answer comprehension questions rather than drawing on the text as written. Their reading comprehension problems are likely to increase as they encounter more embedded phrases and clauses and technical vocabulary in later grades.

**Reading Materials for Balanced Instruction** Phonics readers provide decodable leveled materials that are accessible to students and offer many opportunities to practice decoding skills in the context of connected text. (See Chapter 2 for inexpensive or free sources of decoding materials that can be downloaded from the internet.) However, purely decodable materials may not provide enough experience with partially decodable words or rich vocabulary words that are common in spoken language. Older students struggling at low levels will quickly become bored with sentences such as, "The cat sat on the mat." Basal or literature readers provide more variety in linking oral and written language structures in a way that reflects use of language in real-world contexts; however, the word decoding requirements for such texts may be more complex. The ideal is a combination of the two kinds of text. For example, some classrooms spend some time decoding each day and then read from conventional texts. Others alternate between phonics and literature-based readers on different days, providing opportunities for development of both types of skills.

**Teaching Phonological and Orthographic Awareness**

"Phonological awareness is the ability to notice, think about, or manipulate the individual sounds of words (Torgesen, 1996). Adams (1990) explained that phonological awareness is neither the ability to hear the difference between two sounds nor the ability to pronounce individual sounds. Rather, a beginning reader must first understand that speech can be segmented or broken into small sounds and then learn to relate this awareness of sounds to the awareness of how they are represented in single letters or letter groups in written words (orthographic awareness). That is, readers need to translate printed symbols in written words into corresponding speech sounds, which is the alphabetic principle, and then synthesize the sounds to pronounce whole words. Research shows that phonological awareness enables decoding and decoding enables phonological awareness (reciprocal relationships).

Phonological awareness can be taught, and such teaching makes a difference in beginning reading and spelling achievement. Simply teaching phonics may not be sufficient. The most impressive gains in reading achievement occur when children receive phoneme awareness training along with instruction in the relationships between letters and sounds. The beginning levels of phoneme awareness do not involve written letters or words and, therefore, are not phonics. Later in reading development, phonics—the relationships between letters and sounds—is taught and practiced; in the process, growing orthographic awareness of letter units in written words can lead to growth in phonological awareness of phonemes in spoken words, and vice versa. By convention, sounds are denoted by slashes (e.g., /k/), but letters are denoted by italics (e.g., c).

Sixth-grade students who were not making adequate progress in decoding received additional intervention in phonological awareness training following the sequence listed next, proposed by Kaufman (1995).
1. **Rhyming tasks.** Children must learn to attend to the sounds of the words, not the meaning. Teachers should begin by explaining what a rhyme is and providing examples—many children think that words rhyme if they begin with the same sounds, so the teacher should make it clear that only words that share ending sounds rhyme. As children develop proficiency, the teacher can use the cloze procedure in which the students supply the rhyming word (e.g., “Little Jack Horner sat in the ____”).

2. **Categorization tasks.** To promote further development of phonological awareness, the teacher can introduce activities in which children categorize spoken words on the basis of shared sound units. For example, they might indicate the one that does not go with the others on the basis of rhyme endings (e.g., book, look, like, took) or beginning phonemes (e.g., boy, toy, bat, buy).

3. **Syllable identification tasks.** These tasks (Brady, Fowler, Stone, & Winebury, 1994) are the next developmentally appropriate phonological task. In these tasks, children are asked to find word parts in various positions throughout the word. For example, the teacher can identify a word part (e.g., /all/), and the children must tell whether that syllable appears in the words the teacher names (e.g., fall, tall, ran, land, always, recall, baker, farmer).

4. **Word segmentation tasks.** These tasks (Brady et al., 1994) require the insight that words can be isolated throughout a spoken sentence. Teachers may also request that children say a part of the phrase and decide what to omit. Appropriately leveled readers or storybooks can supply sentences, or teachers can make up their own.

5. **Segmenting and blending tasks.** Blending is introduced once the child can segment by words. Next, students are asked to segment spoken words by first breaking off the first phoneme and then subsequent phonemes of a word or syllable. This analytical activity requires insight that sounds can be isolated. Next, they are asked to synthesize; that is, blend. If necessary, the child might repeat /c/ /a/ /t/, then blend cat. This synthesizing activity is generally thought to be easier than analytic tasks that break whole words apart. However, it has a memory component that requires children to recall sounds in sequence while resynthesizing before repeating the word.

6. **Phoneme manipulation tasks.** In these tasks, students are asked to manipulate the phonemes in a word and then a nonword (Liberman, Shankweiler, Fischer, & Carter, 1974). The initial or ending consonants may be changed or the vowel may be changed or may be reordered in a word (e.g., split, split). Or, the child may be asked to add or delete phonemes (e.g., cap, cap, clap). Kaufman (1995) recommended using words that are only partially decodable with older students so that their memory of the spelling of the words does not interfere with the phoneme analysis task.

The sixth-grade students receiving this instruction had a great deal more difficulty in identifying rhyming words than did younger children in other groups. When they were finally able to identify rhyming words in poems, both in and out of context, they were able to zoom ahead through the other activities that followed and their decoding skills improved.
Teaching Decoding by Applying the Alphabetic Principle, Syllables, and Morphology

In addition to phonological awareness, phonics is necessary. Phonics is the system in which symbols (one or two letters) represent sounds (phonemes). The alphabetic principle refers to the correspondence between these graphemes and phonemes. Explicit phonics refers to an organized program in which these correspondences are taught systematically. However, phonics alone is not enough. Students also need to learn to recognize syllable patterns, spelling patterns larger than the letters or letter groups that correspond to phonemes in the alphabetic principle, and the affixes (prefixes at beginning of words and suffixes at the end of words) in written words accurately and quickly. Students also need to understand the morphology of language—how its roots, prefixes, and suffixes can be used to decode and spell longer complex words that they will encounter more often in reading material in Grades 4 and above (Henry, 2003). Affixes give shades of meaning to root words, which are called base words if they already have had a suffix affixed to it, for example, nation (root word), national (base word), and nationality (affixed base word). Slingerland and Murray’s (2008) Teacher’s Word List can be used as a source of words in teaching the many strategies of decoding, including, but not restricted to, phonics.

Students benefit from learning the six types of syllables (Moats, 2000):

1. Closed syllables have one vowel, which has a short sound, and end with a consonant (e.g., flip, cast, drop, tub, them).

2. Open syllables end in a vowel, and the vowel is long (e.g., go, me). Two-syllable words such as secret contain both open (initial long vowel) and closed (final short vowel) syllables.

3. Vowel-consonant-e syllables have a vowel followed by a consonant and a silent e, which indicates that the vowel before it is long (e.g., safe, bike, hope, these).

4. Vowel team syllables have two letters together that stand for one phoneme. In vowel digraphs the phoneme is one of the possible options for a letter in the pair (e.g., m-ai-n), but in a vowel diphthong the letter-pair stands for a new sound that does not correspond to either single letter (e.g., j-oi-n). Point out to children that w and y are usually consonants but may be vowels in these vowel teams (e.g., t-ow-n or b-oy).

5. R-controlled syllables are letter pairs containing a vowel followed by r together which represent a new vowel sound not corresponding to either the vowel letter or r alone (e.g., arm, term, bird, for, hurt).

6. Consonant-le syllables are spelling units in which the sounds are pronounced in a different sequence (/schwa/ → /1/) than they are spelled (le). Syllable boundaries between this syllable and the preceding syllable depend on speed of pronouncing the word (e.g., puddle, giggle), which might be segmentated so that the consonant preceding the le syllable is heard at the end of the preceding syllable or beginning of the le syllable.

Syllables may also be described by patterns of consonants (C), vowels (V), and consonant blends (two or three letters that are pronounced in sequence very fast to
avoid a vowel intrusion as in /b/-/short u or schwa/-/l/ for /bl/). The following sequence, organized by level of difficulty, is often used in teaching decoding:

<table>
<thead>
<tr>
<th>CVC</th>
<th>hat</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVCC</td>
<td>hand</td>
</tr>
<tr>
<td>CCVC</td>
<td>clap</td>
</tr>
<tr>
<td>CVCVC</td>
<td>craft</td>
</tr>
<tr>
<td>CCCVC</td>
<td>splat</td>
</tr>
</tbody>
</table>

Most approaches to decoding encourage the reader to produce each sound as attentional focus moves across the spelling units in the word from left to right. As a result, reading may have an uneven jerky quality for children with dyslexia who have difficulty directing their attention to sequential spelling units (one- and two-letter units that correspond to phonemes) embedded in written words (see Chapter 7). Others have dysfluent reading because of difficulty in remembering the sounds that go with spelling units—they may forget the beginning sounds in the words and need to start over. Yet others can produce the correct sounds in order but cannot synthesize them to construct a whole spoken word. Vowels often pose the biggest challenge in the decoding process because their position in the word (whether the neighboring letters are another vowel, r, t, or a final e) determines the sound the spelling unit will make and the number of syllables. Struggling readers may have problems decoding for many different reasons, and the reason often provides the important instructional cue for helping them to decode more successfully.

Prefixes, which give shades of meanings to base words (e.g., *preview*); inflectional suffixes, which change the tense or number without changing the word’s part of speech (e.g., *smiled*); and derivational suffixes, which mark part of speech (e.g., *builder*), should be taught. Begin to teach inflectional suffixes in second grade, prefixes in third grade, and derivational suffixes in fourth grade; however, it will probably take a number of years until the affix system is fully mastered (see Nagy, Osborn, Winsor, & O’Flahavan, 1994). For example, *lock* is what we do, *locking* is what we are doing, *locked* is what we did, *locks* means we have more than one lock or tells what someone does, and *locker* means something that locks. Prefixes change the meaning of a base word. *Unlock*, for example, is the opposite of *lock*. Some approaches to decoding recommend students identify the affixes first and then decode the base word and synthesize it with the affixes. Other approaches encourage students to look for known parts of a word to find meaning, and then deal with affixes. In a word such as *reconstruction*, for example, students would look for a word part that they recognize, such as *construct*, and then identify the prefix *re*– and the suffix *-ion*. In either approach, students need not decode each affix. Nunes and Bryant (2006) showed that pronunciation is typically predictably constant across suffix spellings even when alphabetic principle cannot be applied to spell all of the suffix. By identifying affixes first, the student is breaking the word into smaller, recognizable, and manageable pieces and is more able to recognize each unit.

Teachers need to avoid overloading students by asking them to decode words that are too difficult too soon. The goal is to provide practice in the process of decoding. Teachers can individualize instruction by offering more difficult words (CVCC or CCVC) to those children who are ready for them. Table 4.1 shows a chart
of words for an introductory decoding lesson using short vowels arranged by levels of difficulty. Table 4.2 shows a list for introducing two-syllable words. Teachers can keep a daily word list on a chart or on the board, which should be visible to all, to provide students with practice in decoding. Individual students can note the affixes, if they have learned them; identify the spelling units in the base word and make their sounds; give its sound; divide the word into syllables if necessary; and then read the word, synthesizing all the sounds that can be decoded. The teacher should begin by calling on a few able children to serve as models for those who are less confident. The goal is to practice a consistent procedure that helps students internalize the steps needed for decoding. Then they can rely on this procedure and develop independence in reading when a teacher is not available to assist. The class stays involved by repeating the word after it is decoded, providing reinforcement. Every child in a class should have an opportunity to decode a word while others watch and repeat. If the teacher must intervene to assist too many children, the list is too hard. Reteaching and returning to a less difficult list is needed. Other children may provide input and reinforcement while one child is practicing the decoding process. This prosocial, cooperative learning approach teaches important social skills along with reading.

Students develop independence by applying decoding skills in many situations, moving from words in isolation to words in text—from guidance to independence. When the teacher is certain that students have mastered the decoding process, decoding practice may be provided in many ways:

1. Decoding from the chart or board, as noted previously.
2. Decoding from a computer-generated or photocopied list of words.
3. Decoding from the text before the daily reading lesson begins.

Many students learn to decode words in isolation but do not automatically apply their skills when reading. Practicing decoding within a text helps students transfer their decoding skills to situations with more words in connected text and more opportunities for confusion among words on the same line or for difficulty in maintaining attention to the appropriate line.

Decoding instruction should move from simple unambiguous words with short vowels to phonograms, diphthongs (two vowel letters, one new sound; e.g., oi), and vowel digraphs (two vowel letters, sound corresponds to one vowel in
letter combination [e.g., ay]; or two consonant letters, sound corresponds to one sound [e.g., ch], to two-syllable words with two consonants in the medial position (initial closed syllable), and then to one consonant in the medial position (initial open syllable). When teaching words with only one consonant in the medial position, the teacher should begin with open syllable words divided before the single consonant (e.g., lotus, table, bugle). When students are confident with this division, the teacher can show what happens when the word is divided after the medial consonant. When words such as cabin are divided after the consonant (e.g., cab' in), the consonant at the end of the first syllable makes the vowel short and the second vowel a schwa. Gradually with instruction and practice, children improve their decoding of multisyllable words, use multiple prefixes and suffixes appropriately, and learn the effect of accents on syllables in words. When reading materials require it, children also need specific structured teaching of contractions and possessives. For example, children can be asked to convert two words (e.g., can, not) into a contraction (e.g., can't) and dissect a contraction (e.g., don't) into its word parts (e.g., do, not). They can also be asked to use words that are pronounced the same but spelled differently depending on whether the word does signal possession (e.g., The boys' toys were lost) or the word does not signal possession (e.g., The boys lost their toys).

When each decoding concept is mastered, teachers can play games such as Tic-Tac-Toe with the whole class (see Figure 4.1). However, teachers should use only concepts with which the students are confident. To begin the game, the teacher can divide the class into teams, but only the teacher should know who is on which team (the teacher can keep a list of each team). The teacher chooses the first child. If the child follows the decoding process correctly, he or she may place an X or an O in the box. The next child—either chosen by the teacher or the previous student—is automatically on the opposite team. Because the students do not know which team they are on, every student cheers for everyone. The goal of the game is not only to read the word correctly but also to practice the process correctly.

**Preparation for Reading**

Johnson and Hook (1978) found that readers with dyslexia had less metalinguistic awareness and were less able to apply strategies using phonological and grammatical features in their reading. Students with dyslexia require more prereading preparation with vocabulary meaning and oral reading of words or phrases that build conscious awareness of language structures than do classmates. Preparatory instruction also activates background knowledge prior to reading a text that will
contribute to understanding the text once read, builds confidence in succeeding on language tasks, and stimulates curiosity. Preparation activities such as the following provide awareness of the language of the text and have beneficial effects on reading comprehension when children do read written text.

1. **Eye span.** New information may be processed more accurately and efficiently during the fixations (pauses) between the saccades (forward and backward eye movements) while reading written text (Rayner, 1984) if children are optimally engaged because of the preparation activities.

2. **Phrase awareness.** Beginning readers focus on single words. With preparatory activities and reading experience, they become aware of the structures linking multiple words, such as phrases beginning with prepositions; then phrases with noun markers; and then subject, action, and descriptive phrases. Eventually they become aware of syntax structures underlying sentence organization.

3. **Awareness of inflectional endings in written words.** With preparatory activities, children learn that endings of written words may mark number (singular or plural, as in cow or cows) or tense (present or past, as in walk or walked). They also learn how pronouns signal gender (e.g., him and her) and person (1st, 2nd, 3rd, as in I, you, and they).

4. **Awareness of links between oral and written language.** With preparatory activities, children learn how capital letters mark the beginning of a new sentence; how punctuation ends a sentence; and how the whole sentence unit is linked to the intonation (musical melody of spoken language) and systematically varies for statements, questions, and commands.

When the preparation steps (Slingerland, 1976) discussed next are used, both word recognition and comprehension are improved. Decoding is applied, vocabulary meaning is developed and clarified, and understanding and recall of text content are strengthened. Low-achieving readers, particularly beginning readers who have not yet mastered decoding skills, need much prereading instruction and prac-
tice with both decoding and vocabulary at the word level. However, they also need prereading instruction and practice with skills involving units larger than the single word that influence comprehension of text when it is read.

The following preparation steps from Slingerland (1976) help develop rhythm for the musical melody of intonation, eye span, and use of the phrase concept to identify new words using context clues. The teacher can select a list of 8–10 words or 6–8 phrases to be read from the material and print the list in clear manuscript on the board or a chart. A pointer can be used to underline each word or phrase as it is read. The reading group or class repeats each phrase as it is read correctly by the teacher or another student. These same steps, followed with words and/or phrases, should also be used at the beginning of each reading lesson before students open their books.

1. The teacher reads each word or phrase from the list and offers clarification as needed. This is a teaching time for noun markers and prepositions, which give clues to meaning. This step provides practice with building awareness of unfamiliar words, punctuation, and linguistic cues. The class repeats the word or phrase.

2. The teacher says a word or phrase from the list and asks a student to point to the correct word or phrase from the list and read it. If the child is correct, the entire class repeats the word or phrase. Several children should have an opportunity to perform until all are confident with the vocabulary and are reading the phrases fluently. This step for guided practice builds security for when students are reading in a book, and it should not be skipped.

3. The teacher provides a concept clue such as, “Find a phrase that tells ‘where’ the story takes place” (e.g., “in the garden”) or “Find a phrase that describes the building in the story” (“the little white house”). Note that both phrases are about places, but only “in the garden” begins with a preposition and tells “where.” The child then finds a word or phrase that answers the question. Again, the class repeats if the answer is right. The teacher allows as many children to perform as possible.

4. Finally, the teacher asks various children to read all of the words or phrases. If they have difficulty, the teacher will need to return to steps 1 or 2. Table 4.3 (for a text for beginning readers) and 4.4 (for a content area text for older readers) show examples of words or phrases to use in this activity.

<table>
<thead>
<tr>
<th>Table 4.3. Words from a beginning reader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words written on chart</td>
</tr>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>New</td>
</tr>
<tr>
<td>Out</td>
</tr>
<tr>
<td>Now</td>
</tr>
<tr>
<td>Hello</td>
</tr>
<tr>
<td>Put</td>
</tr>
<tr>
<td>Bird</td>
</tr>
<tr>
<td>Horse</td>
</tr>
<tr>
<td>Said</td>
</tr>
</tbody>
</table>
Table 4.4. Phrases from a fourth-grade social studies text

<table>
<thead>
<tr>
<th>Phrases written on chart</th>
<th>Clues given orally</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Rocky Mountain subregion Gold, zinc, lead, and uranium Reminders of the Rocky Mountain gold rush More than a hundred years ago Down a rushing river A town that once was busy</td>
<td>“A phrase that tells where, a geographical area” “Four minerals, words in a series” “What was left after the miners were gone?” “When?” “Where?” “A phrase that tells what, a noun phrase, not a ghost town”</td>
</tr>
</tbody>
</table>

Teaching parts of speech builds vocabulary and makes what is often taught as a separate subject a meaningful part of reading and writing. Some concept words to reinforce comprehension can be found in Appendix 4A. Teaching parts of speech introduces students to concepts such as the following that will allow the class to understand and answer the comprehension questions they encounter as they read text:

1. **Noun markers** (determiners) are articles and sometimes number words. They are markers for noun phrases. When students encounter a determiner such as the, their eyes should move along the page until they find a noun or naming word. The determiner along with the noun or naming word creates a noun phrase, telling “who” or “what.”

2. **Nouns** mark the end of a phrase started by a determiner.

3. **Prepositions** mark phrases that usually tell “where” or “when.” As with determiners, the eyes should pause when they see a preposition, then move to the noun. Prepositions and nouns together create prepositional phrases.

4. **Adverbs** tell “how,” “when,” or “where.” Alert students to the importance of the suffix -ly that tells “how.”

5. **Conjunctions** join words, phrase, and sentences. Appendix 4B lists small words that may require special instruction.

6. **Verbs** are action words. They tell what we do, will do, are doing, or did.

7. **Adjectives** describe size, shape, kind, and how many.

8. **Pronouns** take the place of a noun for subject, object, or possessive cases. Pronouns often cause problems for children with imprecise language. They need practice in determining the referents when pronouns are used. “Who is ‘he’?” or “What is ‘it’?”

9. **Punctuation** signals the rising intonation associated with questions or the falling intonation associated with statements or commands.

10. **Words can function both as nouns and verbs.** Some words function as more than one part of speech (e.g., circle, train, coach).

11. **Accent** affects some words. As accent changes, words may change from nouns to verbs (e.g., rec ord versus record).
Guided Oral and Silent Reading

Teachers should listen to each student read aloud each day in order to check decoding and comprehension skills (Johnson, 2006). During silent reading, students put words together in phrases and sentences to convey thoughts. Word callers, who pronounce the words but do not put them together, miss eye span, rhythm, and meaning for text cues. Students with OWL LD must be taught to perceive and integrate phrases so that they understand the writer’s meaning. A part of each day’s lesson should be devoted to teacher-guided reading to help students develop chunking skills and understanding of the word units that convey meaning. The teacher should begin by structuring the number of words that go together, forming a phrase (Slingerland, 1976). The teacher can help students break the sentences in the text into phrases (e.g., “The first three words tell ‘who’”), continuing the phrase work begun during preparation and explicitly teaching the words that go together. Children should not start reading a phrase until they know all of the words in the phrase. The teacher continues to guide reading, helping children to project thought and anticipate the next phrases.

When students have read and studied the sentence, rereading it aloud gives students the opportunity for successful performance and to develop fluency. This strategy moves from small-phrase units to longer sentence units. In the course of time, less structuring is required, but it should not be dropped; only the amount should be modified. If a sentence is not rhythmically phrased, the rhythm should be tapped on the wall, table, or child’s shoulder to help her or him feel the cadence of the language. Sweeping the arm from left to right is also a reinforcement of the feeling of the rhythm. Students should reread the whole sentence after they have phrased it to build comprehension of the way the chunks build a cohesive sentence.

Each day, after students have some review and practice with seeing and reading phrases, they should move on to reading without teacher guidance. Children must be taught not to skip words or guess their identity from context. The interpretation of text depends on context but word recognition should not. However, it is not enough for students to correctly call the words. Students must read the sentence with good phrasing with attention to punctuation and prosody if they are to develop fluency and good comprehension skills. The teacher should intervene and restructure or model if a student has difficulty, asking the student to read the one phrase that needs improvement. The teacher should remind students of the articles and prepositions in a sentence before which the eyes should pause. Do students know all of the words in the phrase or sentence before they start to read? Do they keep all the describing words together until these words lead to the named word? Teachers should remind children to reread a phrase or sentence when the meaning is unclear. By rereading after studying aloud, children have the opportunity for successful performance. Teachers point out the relationships between the language students read and the language students speak. It is often helpful to remind students to reread as if they are talking.

Bonnie Meyer, a colleague and leader in the Puget Sound Branch of the International Dyslexia Association, has suggested an interesting activity to practice phrase recognition and prepare students for independent report writing: Use consumable text such as a book from Reading A–Z (http://www.readingaz.com). With teacher guidance (e.g., “Highlight the phrases that name a bird”), students highlight the phrases that provide the answers to comprehension questions. This
strategy reinforces the concept that the phrase may be more than just the name of the bird and can include a noun marker as well. “Use a green marker to underline phrases describing what each bird eats.” “Use a blue marker to underline the phrases that tell ‘where’ the bird eats.” Even young children who have had the instruction with prepositions discussed previously will have success and visual reinforcement of the phrase concept in written text.

Fluency

Fluency is how rapidly, smoothly, effortlessly, and automatically connected text is read. When children are fluent readers, they read with little conscious attention to the mechanics of reading, such as decoding (Meyer & Felton, 1999). There is a direct relationship between fluency and comprehension because fluent readers attend to the meaning of the text rather than the mechanics of decoding (Adams, 1990). Fluency, however, does not mean speed reading. It means reading with ease, at a decent rate, and with good comprehension (Hall & Moats, 2001). Two skills are especially important for reading fluency (Wood, Flowers, & Grigorenko, 2001): 1) anticipatory processing of stimuli to be read—letters, written words, and written phrases; and 2) automatic, fast recognition time for processing the letters, words, or phrases. Thus, whereas phonological awareness affects the oral reading of words, orthographic awareness of letters in written words may affect reading fluency (Bowers & Wolf, 1993).

Fluent readers decode and read words with little conscious analysis. Their phrasing and intonation mirror their oral speech. They activate their vocabulary and use their prior knowledge of the structure of sentences to project thought for successful performance. Nonfluent readers decode slowly and haltingly. Their speed is inconsistent, with poor phrasing and poor recognition of prosodic features of the melody of spoken language. They may have inadequate sight word recognition and poor recognition of morpheme patterns. They may omit and substitute letters and/or words and ignore punctuation.

The most commonly used method to increase reading fluency is the repeated reading technique (Meyer & Felton, 1999). Beginning readers should practice naming letters, letter groups, and words on lists. It is helpful for them to reread the lists of decoding words used earlier in the lesson. Emerging readers should practice decodable and partially decodable words on lists and have opportunities for repeated reading in class with teacher guidance. The goal is accurate and fluid reading with adequate speed, appropriate phrasing, and correct intonation. Other activities that aid prosody and fluency include the following:

1. **Sentence completion.** The teacher reads a phrase or phrases. When signaled, a child completes the sentence. Then the teacher reads again and signals another child to complete the sentence. This activity provides good modeling of rhythm and inflection by the teacher. This activity also builds reading group skills, as the students must pay attention and follow along in the text while listening to other readers and also anticipate their oral turns.

2. **Round robin repeated reading.** Each child reads a sentence, paragraph, or page, and then the next child gets a turn. The teacher should expect each child to read with rhythm and fluency.
3. **Readers theater.** Fiction lends itself to role playing, in which someone is designated narrator and others read the parts of different characters. Nonfiction can be used as students assume the roles of narrators or reporters. This activity may be a group rereading for fun or for a performance for an audience.

4. **Choral reading.** The teacher and the class all read a sentence, paragraph, or page aloud. Some teachers use this activity when introducing books to beginning readers, but this activity can also be used to promote oral reading fluency when all students in the group are confident with the material. If any one student is not confident, he or she may get lost in the reading, and the teacher may miss insecurities or errors.

5. **Partner reading.** Paired readers choose a quiet, cozy spot to practice reading to one another. This activity provides additional practice in reading to a classmate after reading in small groups.

6. **Monitored reading.** The teacher can ask an aide or parent volunteer to listen to a student’s oral reading. This activity requires that the teacher build the listening skills of the monitor. It may be necessary for the teacher to help the monitor understand that fluent reading does not necessarily mean fast reading. It means reading with good phrasing, rhythm, and without hesitation.

7. **Repeated reading.** Parents may assist with repeated reading at home by asking children to read orally the same 150- to 200-word passage repeatedly over several days. Children do not have to spend more than 10 minutes rereading each night.

**Reading Comprehension**

Questioning for comprehension helps students think about what they are reading and focus on what they are to learn from a given passage. Teachers should encourage students to find the specific words that provide the answer when answering questions about the text. The terminology used will vary according to student age or experience, but questioning strategies should include the following:

1. Asking students “who?” or “what?” Nouns or noun phrases marked by articles or determiners identify the individual. Noun phrases that include adjectives such as the little brown dog describe. Noun phrases may also give details about number of something (e.g., The seven towering hills).

2. Asking students “where?” or “when?” Students’ eyes should pause when they see a preposition and then move to the noun. A prepositional phrase gives information, such as where something is located (e.g., under the umbrella) or when something occurs (e.g., after lunch).

3. Asking students to find adjectives and adjective phrases that describe (e.g., smooth and slippery).

4. Asking students to identify verb or action phrases (e.g., was sliding, had eaten).

5. Asking students to find what did happen or what will happen to aid understanding of how suffixes and inflectional endings change or shade meanings by past, present, future time, possessive, number, gender, and so forth. The suf-
Teaching Reading

fix -ly tells “how,” the suffix -ing tells what someone or something is doing, and the suffix -ed tells what has happened.

6. Asking students to clarify use and meaning of pronouns (e.g., “To whom does it refer?” “Who is she?”).

7. Asking students to demonstrate their understanding of punctuation and the ways it gives meaning in a sentence—including dashes, the many uses of commas, quotations, and others (e.g., “Why does this sentence end with an exclamation mark?” “What mark shows that this is additional information?”).

8. Asking students to locate precise vocabulary that gives inferential information (e.g., “What word in the sentence tells how the character feels?”).

9. Asking students to predict outcomes (e.g., “What will happen? How do you know?”).

10. Asking students to summarize (e.g., “What is the character’s daily routine?”).

11. Asking students to read the introduction when rereading (e.g., “Where does the story really begin? How do you know?” “Where does the ending or conclusion begin?” “What key words should we look for?” “What kind of story or article is this? Why?”).

Comprehension is dependent on a child’s own understanding of the structure of language. For example, a second-grade girl in Beverly Wolf’s school was reading a book and came across the following sentence: “How quiet it was.” A simple sentence, but the girl could not read it. Each time she tried she would say, “How is,” and then stop. Then the teacher said, “It’s not a question.” The child immediately read the sentence correctly. Her anticipation of what would follow the word How had made her say is. She expected a question and tried to make the sentence fit her expectation.

Repetition and review in functional reading situations gradually brings about independence. After guidance through the first two or three paragraphs or pages, children may be able to study the final page or two by themselves. Before asking students to read independently, teachers should provide structure for successful independent reading by reminding them to decode when possible, to use good phrasing or chunking, and to reread to be sure they understand each sentence. When students have studied and completed the whole paragraph or story, they should reread the whole story orally. Group rereading of the story should be for pleasure and fluency alone.

Independent Reading Activities

The following general principles should be kept in mind in designing meaningful independent activities:

1. Activities may be related to any skills previously taught. In general, worksheets can provide additional practice and/or enrichment (extension or stretching) of those skills.

2. Activities should be meaningful, and worksheets that ask students to fill in the blanks should be avoided because they do not encourage children to apply
new learning to constructing meaning or text. Asking students to reread previously read text or to choose a book of interest at the student’s independent reading level is likely to do more to reinforce taught reading skills. Asking students to write their own sentences or text about what they have read is more likely to foster development of their writing skills and integration of writing and reading skills to communicate ideas.

3. Tasks with functional utility are desirable. For example, children might alphabetize words on the decoding list for the day, copy them into a personal dictionary, and illustrate them. Phrases might also be copied and illustrated and used in booklets children write and use for further reading practice. See Sanderson (1988, 1989) for examples of this kind of independent activity with instructional materials that can be duplicated.

4. Activities that encourage children to develop metalinguistic awareness of their own learning are helpful. Teachers can give children newspapers and magazines and ask them to circle the words they can decode with a green marker and the words they cannot decode with a red marker. Then, the teacher can use those words for further teacher-guided instruction. The sports pages or the front page often have the easiest vocabulary words for students. This activity helps students build awareness of their own abilities to attack unfamiliar words.

5. Activities that encourage children to apply new learning to a variety of real world applications are helpful. Alternatively, the teacher can ask children to search newspapers or magazines for phrases with particular words, such as nouns, verbs, or prepositional phrases. Using real-world reading material may stimulate their interest in reading on their own and not just when they have to read in class.

6. See Chapter 2 for additional suggestions.

RESEARCHER CONTRIBUTIONS

We now examine research-generated knowledge that is relevant to teaching reading.

Multimodal, Leveled Language Instruction for Children with Dyslexia and OWL LD

Despite the widespread myth that oral language is auditory and reading is visual, research has shown that reading involves creating maps between written words, based on visual inputs, and spoken words, based on auditory inputs. The early pioneers in teaching children with dyslexia knew intuitively that both auditory and visual processes were involved, also in addition to kinesthetic (touch) sensation from writing words, and hence emphasized the multisensory aspects—auditory, visual, and kinesthetic—of teaching reading to students with dyslexia. However, years later, it became clear that more than the primary sensory brain regions for auditory input and visual output are involved in reading. Rather, it was determined that 1) association areas in the brain transform sensory auditory input into higher-level phonological representations and transform sensory visual input into higher-level orthographic representations and integrate the phonological and orthographic representations, and 2) motor regions are involved in producing written
Teaching Reading

language. Thus, multimodal sensorimotor instructional approaches are needed for students with dyslexia or OWL LD. In addition, the instructional approaches should be aimed at multiple levels of language, as illustrated in the Teacher Contributions sections in Chapters 3, 4, and 6. (For a review of research leading to these conclusions, see Berninger & Richards, 2002.)

Linguistic Awareness and Working Memory

Mattingly’s (1972) insight that linguistic awareness is related to reading acquisition revolutionized how reading and reading disability are conceptualized. Linguistic awareness is conscious reflection about any aspect of language, which can be analyzed at many different levels:

1. Sounds in spoken words (phonological awareness)
2. Letters in written words (orthographic awareness)
3. Morphemes or word parts that convey meaning and may mark parts of speech or other syntactic information (morphological awareness)
4. Syntactic structures in spoken utterances or in written sentences (syntactic awareness)
5. Discourse schema or higher order organization of oral stories or written texts (discourse awareness)

Many functions of the human mind occur outside conscious awareness in what psychologists call implicit memory. Conscious awareness of thinking requires explicit memory and working memory (Baddeley & Hitch, 1974), which supports goal-related tasks such as reading. Working memory has limited resources to support storage and processing of information; thus, working memory can make available to consciousness only a fraction of one’s mental processes at a particular moment in time.

Researchers also found that learning to read requires linguistic awareness, and children with reading disability have impaired linguistic awareness (e.g., Mattingly, 1972). Linguistic awareness includes the ability to hold words in mind and reflect on their parts. As such, linguistic awareness helps children learn to store and process words in conscious working memory for specific reading goals. For example, phonological awareness of the small sound units called phonemes helps children associate them with graphemes (one- and two-letter spelling units) in learning to decode words. Orthographic awareness of graphemes in written words also contributes to learning to apply grapheme-phoneme correspondences in decoding. Morphological awareness of word parts that signal meaning and grammar also contributes to conscious awareness of written and spoken words in learning to decode written words (Nagy, Berninger, Abbott, Vaughan, & Vermeulen, 2003). The various instructional activities described in the Teacher Contributions section in this chapter develop these kinds of linguistic awareness.

Research has also shown that working memory supports learning to read, and children with reading disability have impaired working memory (e.g., Siegel, 1994; Swanson, 1999a, 2006; Swanson & Ashbaker, 2000). The greater one’s conscious linguistic awareness of the task-relevant levels (units) of language, the fewer working memory resources are needed to complete a reading task in explicit memory. Like-
wise, if some parts of the reading task can be completed automatically in implicit memory outside of conscious awareness, then fewer of the limited working memory resources will be needed to complete the task in explicit memory.

Explicit instruction is designed to 1) bring relevant levels of language to conscious awareness by first reflecting on them in explicit working memory and then 2) develop automatic decoding and word identification in implicit working memory to free up limited cognitive resources in working memory. Such instruction might be referred to as explicit because the teacher-guided dialogue serves to make children aware of different aspects of oral and written language in conscious working memory. It is not direct instruction as implemented with fixed teacher scripts, although lesson plans for teacher-guided instructional activities are used. As illustrated earlier in the chapter, the teacher guides by questioning and gives children ample opportunities to construct responses and practice skills. Many of the illustrated examples of teacher-guided prompts for processing at different levels of language show that teachers are expected to respond flexibly to student response to instruction and adapt instruction as necessary for individuals. Also, in the recommended approach, the teacher is well prepared ahead of time so that he or she can respond flexibly and responsively to the students’ instructional needs, as observed in the unfolding teaching–learning interaction cycles.

Students will vary in the degree of explicit instruction they require. Those with dyslexia impairing their word decoding and those with OWL LD impairing their reading comprehension as well as word reading will require the highest levels of explicit teaching, modeling, and teacher-guided student-response construction. Other students in other instructional groups may require moderate to minimal degrees of explicit instruction and may even benefit from student-generated and self-guided learning (for evidence, see Connor, Morrison, & Katch, 2004). Differentiated instruction that meets the instructional needs of ALL students in the classroom provides the appropriate mix of teacher-directed instruction and student-generated learning for each student. Such a mix can be accomplished, but it requires flexible cognitive and language processes of not only the student (see Deák, 2001) but also the teacher (see Chapter 10).

**Importance of Three Kinds of Linguistic Awareness**

For historical reasons, phonological awareness received more attention than orthographic and morphological awareness at the end of the 20th and beginning of the 21st century. At the time Mattingly (1972) wrote his influential chapter, the prevailing view was that dyslexia was a visual perceptual disorder. Shortly thereafter, Velutino (1979) presented compelling data to debunk that view, and made a compelling case for the alternative view that dyslexia is a language-based disorder. The notion that reading draws on language processes, which is now the prevailing view, has subsequently received research support from around the world. Just because the eye and visual regions of the brain play a role in the initial processing of written words, it does not follow that dyslexia is a visual perceptual disorder and requires visual perceptual training. Rather, individuals with dyslexia need specialized language instruction. Individuals with and without dyslexia differ in the brain regions that integrate letters with sounds in speech to create orthographic representations of written words (e.g., fusiform gyrus); thus, reading written
words involves visible language, but not primarily nonlinguistic visual processes (Berninger & Richards, 2002, Chapter 5).

Many groundbreaking studies pinpointed the role of phonological awareness in learning to read (e.g., Bradley & Bryant, 1983; Bruce, 1964; Liberman et al., 1974; Körner, 1974). Numerous studies followed (for review of early studies, see Wagner & Torgesen, 1987). The National Reading Panel (National Institute of Child Health and Human Development, 2000) reviewed subsequent studies and concurred that phonological awareness is an essential component of reading instruction ( Ehri, Nunes, Stahl, & Willows, 2001; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001). As illustrated in the Teacher Contributions section in this chapter, phonological awareness involves a number of units ranging from rhymes to syllables to phonemes. In addition, it involves onset-rimes, the parts of the syllable remaining after the onset (Treiman, 1985). Teachers sometimes refer to the rime parts of a syllable as phonograms (e.g., and as in hand, end as in bend, ich as in rich, ong as in long, ump as in bump) or word families. Children are taught word families for correspondences between multiletter units and speech units that are more predictable in word family units than are single letters or letter groups that correspond to phonemes (e.g., ight in right; ough in rough, through, and thought). Berninger (1998b) identified 23 high-utility word families that are more predictable than their internal grapheme–phoneme correspondences.

Research also shows that two other types of linguistic awareness are relevant to learning to read: orthographic awareness (Apel, Oster, & Masterson, 2006; Badian, 1998; Berninger, Yates, & Lester, 1991; Bowers & Wolf, 1993; Olson, Forsberg, & Wise, 1994; Olson, Forsberg, Wise, & Rack, 1994; Pacton, Perruchet, Fayol, & Cleeremans, 2001; Templeton & Bear, 1992; Venezky, 1970, 1999) and morphological awareness (Bryant, Nunes, & Bindman, 1977; Carlisle, 1995, 2000, 2004; Carlisle & Fleming, 2003; Carlisle & Nomandhay, 1993; Carlisle, Stone, & Katz, 2001; Derwing, 1976; Mahony, Singson, & Mann, 2000; Nagy, 2007; Nagy & Anderson, 1999; Nagy, Anderson, Schommer, Scott, & Stallman, 1989; Nagy, Berninger, & Abbott, 2006; Nagy et al., 2003; Pacton, Fayol, & Perruchet, 2005; Pacton et al., 2001; Singson, Mahony, & Mann, 2000; Tyler & Nagy, 1989, 1990; White, Power, & White, 1989). Why, however, has this much evidence been ignored by the experts? The National Reading Panel did not comprehensively review the research on orthographic and morphological awareness and thus all important aspects of linguistic awareness. Yes, phonological awareness is necessary. No, it is not sufficient alone for either beginning or skilled reading. Orthographic and morphological awareness are also needed—both for children with and without dyslexia (Berninger, Raskind, Richards, Abbott, & Stock, 2008).

Venezky (1970, 1999) showed that English is a morphophonemic orthography that represents speech in a predictable way. Written English codes a word’s sounds, spellings, and morphemes. Thus, three kinds of linguistic awareness for words should be included in the instructional program for reading: phonological, orthographic, and morphological. In Chapters 7, 8, and 9 more research evidence relevant to the importance of teaching children awareness of phonological, orthographic, and morphological word forms and their parts is discussed.

The research evidence clearly supports teaching phonics, especially through third grade, that draws on phonological and orthographic awareness (see Ehri et al., 2001; Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998; Slavin, Mad-
den, Dolan, & Wasik, 1996; Snowling, 1980). As shown in Table 2.1, more than one effective way for teaching phonics has been developed by teachers for students with dyslexia.

Both students with and without dyslexia also need to develop morphological awareness (e.g., Berninger et al., 2008; Nunes & Bryant, 2006). Typically developing students in the classroom also benefit from morphological awareness instruction, which contributes to word reading, vocabulary, and reading comprehension (e.g., Carlisle & Rice, 2002; Nagy et al., 2006; Stahl & Nagy, 2005). In groundbreaking controlled studies, Henry (e.g., 1988, 1989) showed an advantage for teaching morphological strategies in addition to phonics. Morphology should not be equated with semantics. Morphology refers to word formation structure—root or base words plus prefixes and/or suffixes. As such, morphology is a language concept. Semantics refers to the cognitive representations underlying vocabulary meaning (see Stahl & Nagy, 2005). For example, morphological awareness may be assessed by asking students to decide if two words are related in meaning (e.g., builder and build, corner and corn) or which suffixed word (e.g., builds, building, builder, or built) fits a sentence context (e.g., “The ______ is making a corner”). Semantics may involve deciding if two words are synonyms (e.g., baby and infant, son and father).

**Cross-Word Form Mapping**

Children also benefit from instruction in how to coordinate units of phonological, orthographic, and morphological information in pronouncing written words and thinking about their vocabulary meaning. The Teacher Contributions section earlier in this chapter, offered practical suggestions for this instructional goal. Word sorts are another effective way to accomplish this goal (see Chapter 9 and Unit I, Word Detectives, in accompanying workbook, Helping Students with Dyslexia and Dysgraphia Make Connections (Berninger & Wolf, 2009). For other valuable instructional guidelines, see Nagy, Osborn, Winsor, and O’Flahavan (1994) and Nunes and Bryant (2006).

Two kinds of mapping across written words and spoken words may be involved in learning to read: **fast mapping**, based on one or two exposures (e.g., naming visual objects and acquiring semantic concepts in acquiring oral vocabulary [McGregor, 2004], and beginning reading and spelling [Apel et al., 2006]) and **slow, effortful mapping**, which requires many more exposures, more practice, and explicit instruction. Fast mapping may explain how children acquire automatic sight word vocabulary. In contrast, slow mapping is based in large part on the alphabetic principle and its transfer to phonological decoding. Both fast and slow mapping may contribute to the creation of an autonomous orthographic lexicon (mental dictionary for written spellings), which has links to pronunciations and word meanings. Early intervention with at-risk first-grade readers showed that a whole-word strategy, in which every letter was named and the whole word was pronounced (fast mapping), and the alphabetic principle (slow mapping) were both effective; no relative advantage for onset-rime strategies was observed for at-risk readers at this stage of reading development (Berninger, Abbott, et al., 2000).

In many readers, the fast mapping orthographic representations are refined by slower mapping during self-teaching, which is decoding words while reading (Share, 2008), or by teacher-guided, explicit instruction during reading lessons (see
the Teacher Contributions section in this chapter). Children with dyslexia or OWL LD may have problems in fast mapping so that they have to rely greatly on slow mapping to create the maps for translating written words into spoken words. In Chapter 7, we discuss possible reasons for this impaired fast mapping.

**Importance of Word Origin**

Henry (1993) showed the importance of teaching Latin and Greek phonemes and morphemes as a word decoding strategy for developing readers beyond the initial stage of word decoding. Explicit reading instruction, however, should not end after the third grade. In fourth grade and above, instruction should focus on mapping strategies related to morphology as well as orthography and phonology and to reading specific words that are likely to be of lower frequency, longer, and more complex than words encountered in previous grades.

Balmuth (1992) and Henry (2003) discussed the historical context and instructional relevance for word origin in teaching reading. The most frequent words in oral language are Anglo-Saxon, a version of English based on Old German and English. Compared with the total number of English words, these high-frequency words total only about 1,000 words, and many of them are function words. These function words include conjunctions, prepositions, pronouns, articles, and helping verbs (e.g., is), which have no meaning of their own apart from the sentence context in which they occur, but glue the content words (e.g., nouns, verbs, adjectives, adverbs) of the sentence together. Most of the written words in textbooks used in Grades 1, 2, and 3 contain Anglo-Saxon words, which tend to be of one or two syllables; the first syllable is typically accentuated.

In contrast, the content area subject textbooks in Grades 4 and above have an increasing numbers of words of Latin or French (romance languages) and Greek origin. Individual words of Latin, French, or Greek origin are lower in frequency than words of Anglo-Saxon origin and tend to have three to five syllables; tend not to accent the first syllable, contain schwas (reduced vowels) whose spelling has to be memorized for specific word contexts, and are generally longer and more complex than words of Anglo-Saxon origin. For example, multiple suffixes can be added to a word, as in transforming *inform* (a verb) to *information* (a noun) to *informational* (an adjective). Latin and Greek words are used in the written language of formal schooling, and individuals who have more schooling have more opportunities to learn them (Beeler, 1988). Thus, as Beeler pointed out, children whose parents have more formal schooling are more likely to hear those words spoken in the home than children whose parents have had less schooling. That is why children of less-educated parents are likely to be at an academic disadvantage at fourth grade and above. They have less oral exposure to the kind of words that increasingly appear in written texts in the upper grades. However, the contribution of morphology to word formation in longer, more complex words can be taught at school even if children do not hear those kinds of words at home.

Henry (1990) summarized the important differences in the phonology, orthography, and morphology of words of different word origin. For example, whereas the letters *ch* may stand for the /ch/ phoneme at the beginning of *children* or *chalk* in Anglo-Saxon words, in Greek words it stands for the /k/ phoneme as in *chorus* or *psychology*. Although *sh* is the only spelling for the /sh/ phoneme at the beginning of *should* or *shall* in Anglo-Saxon words, in words of Latin or French origin the
/sh/ phoneme can be spelled with ti as in nation, ci as in ancient, or si as in mission. The morphology is also different across word origin. Many of the suffixes in Anglo-Saxon code inflection (past tense, plural, comparison of two or more than two), contractions involving function words, or ownership (possessive). Many of the suffixes in Latin or French words code derivation that marks parts of speech and therefore syntactic clues for using a word in sentence context. Greek morphemes, on the other hand, contribute jointly rather than modifying bases, for example, automobile (a self-driven motion machine).

See Berninger and Richards (2002) and Chapter 7 for pseudowords from Anglo-Saxon and Latin word origins to use in professional development workshops to expand teachers’ linguistic awareness related to word origin and how this knowledge and knowledge of the three kinds of word-level linguistic awareness might be applied to instruction. See the accompanying book of lesson plans (Berninger & Wolf, 2009) for the POM POM Certificate to award to teachers who then grasp the importance of phonological, orthographic, and morphological (POM) awareness in teaching reading and how these may be unique for words of different origin.

The instructional significance of morphology extends beyond its benefits for students with dyslexia or CWL LD. As Nagy (2007) proposed (see Chapter 7), teaching morphological awareness and decoding in school may be the way to narrow the achievement gap between children whose families differ in education and income levels and ethnic or racial backgrounds.

**Strategic, Automatic, and Fluent Reading**

When a skill can be performed only with application of explicit, controlled strategies (Schneider & Chein, 2003; Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977), it is said to be strategic. Examples of skills that require strategic processing include decoding unknown words, which may be words never encountered before or words that were encountered but are not remembered, and reading comprehension.

When a reading skill becomes automatic (Samuels, 1985), it executes outside conscious awareness in implicit memory. An example of a reading skill that might become automatic is recognition of a previously encountered word without the reader consciously devoting strategies to decode it. Learning new skills typically requires strategies. Once the skill is practiced and mastered, it may become automatic (direct access without conscious awareness) or fluent (executed quickly and in a coordinated, efficient manner). However, reading comprehension typically requires strategies and cannot be performed completely automatically outside of conscious awareness.

Ehri (1992) provided a conceptual framework for how phonics is coordinated with word-level processes in developing automatic recognition of words. Although automatic recognition of written words is often referred to as a sight vocabulary, the use of the word sight is somewhat misleading because the visual code is not the only code involved—at least two different codes—phonological and orthographic—are involved.

Automatic word recognition also draws on word-specific representations of written words in long-term memory. These orthographic representations have links to other language (phonological and morphological word forms and their parts) and cognitive (semantic associations and concepts) representations in long-term memory.
When children can recognize single words automatically and use sentence syntax to combine words in meaning units and comprehend the text they are reading orally or silently, their reading is likely to be fluent—smooth, coordinated, effortless reading at the appropriate rate for the task at hand. Fluency is not just fast reading. The appropriate speed depends on the task at hand, for example, skimming for information, initial reading before receiving explicit comprehension instruction, subsequent reading and reflective discussion, preparing a written summary with main ideas and supporting details, taking notes for preparing a written report, or studying for a test.

Biemiller (1977–1978) provided the first evidence that reading rate across multiple levels of language, ranging from letters to words to text, contributed to reading fluency. Dowhower (1987) showed that in reciprocal fashion, reading comprehension contributed to fluency. Biemiller and Siegel (1997) demonstrated that vocabulary instruction contributed to accurate and fluent reading in children at risk for reading for environmental reasons. Breznitz (1997) reported evidence that computerized accelerated reading programs tailored to individuals’ reading rate improved the reading fluency of children with dyslexia. Breznitz (2005); Stahl and Heubach (2005); Stahl, Heubach, and Crammond (1997); and Wolf (2001) reviewed the abundant evidence for the importance of reading fluency.

Research supports a number of teaching approaches for developing reading fluency. Repeatedly reading the same text improved the reading fluency of at-risk second-grade readers (Dowhower, 1987). Prior word-level training for single words that would appear in the text also improved some aspects of reading fluency (Levy, Abello, & Lysynchuk, 1997). For children with dyslexia who had not yet developed adequate knowledge of the alphabetic principle and decoding, combining instruction directed to automatic alphabetic principle as well as repeated readings was more effective than repeated readings alone (Benninger, Abbott, Abbott, Graham, & Richards, 2002).

Vocabulary and Reading Comprehension

The National Reading Panel (NICHID, 2000) also concluded that both vocabulary and reading comprehension should be taught. See Stahl and Nagy (2005) and Carlisle and Rice (2002) for reviews of the research evidence for effective ways of teaching vocabulary and reading comprehension.

Even though dyslexia is a disorder in word decoding, word reading, and spelling, students with dyslexia need more than phonics instruction. They also need to receive instruction in transfer of that phonics to the actual decoding process and repeated practice in applying decoding until word recognition becomes automatic. Students with dyslexia or OWL LD also benefit from systematic instruction in developing vocabulary meaning and reading comprehension. To comprehend a variety of texts, these students need instruction and practice in coordinating the multiple modes of input, output, and their integration and the multiple codes within levels of language in working memory so that they work in concert.

Cognitive Representations and Learning Mechanisms

Reading is a tool for deriving stated meaning from text and constructing meaning that can be inferred from text based on background knowledge of the world and
language. The nature of the cognitive representations that are activated or accessed via the written words and text schema is also relevant to teaching reading. On the one hand, some of this knowledge is represented in associational networks (Anderson & Bower, 1973). When a word points to a concept or idea in the network, other concepts are immediately activated to varying degrees along the distributed network. Free association (saying everything that comes to mind when one thinks of one idea) is a window to this kind of cognitive representation in the mind. On the other hand, some of this knowledge is represented in hierarchically arranged categories in which similar information is clustered together because it shares some common features; however, some exemplars of the category may be more representative of the category than other exemplars (e.g., Rosch, 1978; Rosch & Mervis, 1975). Moreover, the same concept can be categorized differently depending on the situation. For example, a pet cat belongs to the category *living things* in the context of life forms and nonlife forms, to the category *animals* in the context of animals versus plants, and to the category *pet* in the context of domesticated animals versus wild animals. *Human cognition is both situated in specific and flexible contexts, depending on the task and context at hand.*

In addition, experiences are coded in episodic memory (Tulving, 2002). These episodic events, which are coded in temporal sequence, are a very different kind of cognitive representation than either associations or categories. None are language representations per se, but via the association regions of the brain, they may be translated into various levels of language. Episodic events track word frequency that affects word recognition, patterns of ordering types of words that affect syntax learning, and sequence of events in stories that affect learning narrative genre. Collectively all contribute to reading comprehension.

Some cognitive representations are declarative and some are procedural (Anderson, 1993). *Declarative knowledge* is factual and conceptual and may draw on the associational network, hierarchical categorical representations, or episodic representations. In contrast, *procedural knowledge* specifies how to do something. Although the goal of reading is to derive and construct meaning from text, the goal of reading instruction, especially during the elementary school years, is to teach procedural knowledge for executing the process of reading—translating written words into both language representations (e.g., spoken words, syntax) and cognitive representations (word meaning and text understanding).

A controversial, unresolved issue in reading is whether learning to read is rule governed and simply requires application of rules or whether it involves computation of connections or associations rather than rule application. Although cognitive scientists continue to disagree vehemently about this issue, teachers may consider the possibility that students may benefit from both approaches: 1) the rules may provide metacognitive guidance to use in self-regulated, independent reading, as long as the students do not interpret the exceptions to the rules as evidence that English is hopelessly irregular; and 2) the associations or connections close in time may improve automaticity and fluency and thus efficiency of working memory supporting the reading process.

Effective teaching methods for reading will draw on a variety of cognitive representations and learning mechanisms. Teaching procedural knowledge may be more related to learning decoding and word reading, whereas teaching declarative knowledge may be more related to learning vocabulary meaning and reading comprehension strategies. Precision teaching methods that create automatic connec-
Teaching Reading

...close in time may facilitate learning of procedural knowledge for coding written and spoken words and their parts in working memory and translating one code into another (e.g., written words into spoken words in oral reading or written words into morphological word forms in silent or oral reading). Teacher modeling of the decoding process, with students imitating, may help transfer procedural knowledge to the students' own decoding during independent reading. See Chapter 9 for how these learning mechanisms were applied to specialized instruction for students with dyslexia. Instructional approaches that encourage children to access declarative background knowledge during reflective discussions before and after children read a text may also, however, facilitate reading comprehension. Such approaches may also facilitate construction of new declarative knowledge.

Two controversies persist related to teaching students at risk for reading failure. One controversy has to do with the role of the teacher in directing instruction. Some teacher educators firmly believe that children should construct their own knowledge and that teacher-led dissemination of knowledge should be avoided at all costs. For a thoughtful discussion on the potential problems with this approach when taken to an extreme, see Mayer (2004). Many who advocate for the constructivist view of child-directed learning may have in mind a different population of students than those who advocate for the teacher-directed instruction view. The former may be more relevant to students who come from high-literacy homes and enter schools well prepared for literacy learning that emphasizes student construction of knowledge. The latter may be more relevant to students who come from low-literacy, low-income homes or come with biological risk for dyslexia or OWL LD and do not enter schools with all the skills needed for literacy learning. That teacher-directed instruction need not be rote drill and skill, but it needs to be explicit and raise levels of consciousness about levels of language. The evidence from Connor and her colleagues' (2004) research, which won the best research of the year award from the International Reading Association in 2005, showed that both groups exist and benefit from different instructional approaches in beginning reading. Chapter 10 discusses practical suggestions for meeting the needs of both groups in the general education program.

The other cognitive issue that remains controversial has to do with what is meant by intensive instruction (see Torgesen et al., 2001). Do students with dyslexia or OWL LD benefit from receiving the same kind of instruction as their classmates over and over for a longer period of time, or do students with dyslexia or OWL LD need a different kind of instruction when they do not respond to the kind of instruction that works for their classmates? Should students who come from families with multigenerational histories of oral language, reading, and writing problems be given only the Tier 1 core curriculum adopted by the school system and monitored for whether they fail to respond? Or, should their weaknesses in language and related processes be identified in kindergarten and first grade so that they can receive specialized instruction from the beginning to increase the probability that they will respond to instruction and continue to do so? These issues will be considered further in Chapter 8.

CONCLUSIONS

In sum, the instructional activities described in the Teacher Contributions section in this chapter converge with growing evidence showing that all students bene-
fit from instructional approaches for reading that teach phonological, orthographic, and morphological awareness and their interrelationships to word decoding and word reading (Sawyer, 2006). In addition, the teacher and researcher contributions converge on the importance of teaching automatic word recognition, fluent oral and silent reading, and strategies for reading comprehension. Both teacher-generated knowledge and research-generated knowledge lead to the conclusion that students with dyslexia and/or OWL LD benefit from a variety of instructional approaches that stimulate different kinds of learning mechanisms and create different kinds of cognitive representations in the minds of readers.
Appendix 4A

CONCEPT WORDS THAT REINFORCE COMPREHENSION

top
through
next to
away from
inside
some, not many
middle
few
farthest
around
over
widest
most
between
whole
nearest
second
corner
several
behind
in a row
different
after
almost
half
center
as many
beginning
side
other
alike
not first, or last
never
below
matches
always
medium sized
right
forward
zero
above
every
separated
left
pair
skip
equal
in order
third
least
# Appendix 4B

**SMALL, IMPORTANT WORDS THAT MAY REQUIRE SPECIAL INSTRUCTION**

<table>
<thead>
<tr>
<th>Word</th>
<th>Various meanings/usages</th>
</tr>
</thead>
</table>
| And  | Connects words or phrases  
|      | More of the same  
|      | Lists words and phrases in a series  
|      | Also, too, in addition  
| As   | In the same way  
|      | At the same time, while, during  
|      | Because  
|      | Just as or same as  
|      | Like  
|      | While  
| But  | An exception, something different  
|      | Connects two contrasting ideas  
|      | Only  
| If   | Condition  
|      | Reason  
| Only | Singly—only in its class  
|      | Simply  
|      | Merely  
| Or   | This or that  
|      | Instead of  
|      | Different  
|      | Opposite  
| Since| Because  
|      | From a certain time until now  
| So   | As a result of  
|      | This came about  
| Sometimes | Not always, periodically  
|      | Now and then  
|      | Once  
|      | Past, erstwhile  
| Than | Comparing/inequality  
|      | More than  
| Then | When  
|      | After that  
|      | At that time  
|      | Following next  


<table>
<thead>
<tr>
<th>Word</th>
<th>Various meanings/usages</th>
</tr>
</thead>
<tbody>
<tr>
<td>To</td>
<td>Tells where&lt;br&gt;Attachment&lt;br&gt;A direction&lt;br&gt;Opposite ends</td>
</tr>
<tr>
<td>What</td>
<td>Shows stress&lt;br&gt;Asks a question</td>
</tr>
<tr>
<td>When</td>
<td>At a certain time</td>
</tr>
<tr>
<td>While</td>
<td>Although&lt;br&gt;During that time&lt;br&gt;As</td>
</tr>
<tr>
<td>Yet</td>
<td>A time word meaning <em>up to now</em>&lt;br&gt;Even so&lt;br&gt;However&lt;br&gt;Excepting&lt;br&gt;Nevertheless&lt;br&gt;Still&lt;br&gt;At the same time&lt;br&gt;It is also the case</td>
</tr>
</tbody>
</table>