In the previous chapter, some of the broader educational recommendations of orthographic mapping were presented, including 1) training phonological awareness and sound symbol skills, 2) teaching reading in a developmentally appropriate way, and 3) postponing reading approaches that do not promote mapping. This chapter provides a toolkit full of strategies to train, support, and highlight the word study aspect of orthographic mapping. The goal is for students to develop efficient, permanent word storage and to improve their reading fluency and comprehension. This is the chapter that provides you with the proverbial “bag of tricks.”

The strategies in this chapter assume that the teacher understands the basic concept of orthographic mapping (see Chapter 4). If you do not understand orthographic mapping, many of these strategies will not make much sense to you. But if you understand mapping, the point of all these interventions will be clear.

These strategies also assume that students will have some basic phoneme level skills. If students have 1) at least mastered Levels H, I, & J, which are the basic phoneme skills, 2) can segment phonemes,1 3) are making progress on Levels K through M, which are the advanced phoneme skills, and 4) have developed good sound-symbol skills (see chapter 12). If any of these are not the case, then many of the strategies in this chapter may not work so well.

**ACTIVITIES THAT PROMOTE MAPPING**

When children are involved in various literacy activities, teachers and parents should point out the relationship between what students hear in spoken words (i.e., the phonemes), and how the order of the written letters matches up with the order of those oral phonemes. There are numerous ways to do this. Many of the following methods should be used for beginning reading instruction. Right from the start, we want students to learn to efficiently map words to permanent memory. This is the key to building a large sight vocabulary. However, these techniques should also be used for remedial efforts. Older students (grade 2 through adulthood) who have developed inefficient or compensating strategies for remembering words must “undo” bad habits. They must “relearn” how to approach words in a more efficient way.

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1See the next chapter on the distinction between segmentation and manipulation. After reading the next chapter, this assumption should be quite clear.
I’ve divided these techniques into 1) strategies to use for beginning reading and remedial reading and 2) strategies for remedial reading only. This second group includes some unusual or “extreme” strategies that are unnecessary for beginning reading and should be reserved for helping older students (past second grade) break their compensating habits. Appendix D lists and summarizes each technique to provided as a quick reference to help lesson planning.

### STRATEGIES FOR BEGINNING READING AND REMEDIAL READING

1) **Give students the vocabulary of mapping**

   Students learn best if they have labels attached to the concepts they are learning. Therefore, provide students with the vocabulary they need to understand the mapping process. A proper vocabulary helps sharpen their minds, enhances communication between teacher and student, and allows them to view words more analytically. Such critical analysis naturally fosters word study, which in turn fosters permanent word storage.

<table>
<thead>
<tr>
<th>Syllable</th>
<th>Rime Unit</th>
<th>Consonant digraph</th>
<th>Oral Blending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Alliteration</td>
<td>Vowel diagraph</td>
<td>Letter Strings</td>
</tr>
<tr>
<td>Rime</td>
<td>Vowel</td>
<td>Phoneme</td>
<td>Map</td>
</tr>
<tr>
<td>Rhyming</td>
<td>Consonant</td>
<td>Phonics</td>
<td>Automatically</td>
</tr>
</tbody>
</table>

#### TABLE 6.1
**EXAMPLES OF MAPPING-RELATED WORDS STUDENTS SHOULD KNOW AND USE**

In kindergarten, children learn the words *letter* and *word* but should also learn *syllable*. They should be able to identify how many syllables are in words. In first grade, most children learn the words *vowel* and *consonant*. However, more words are needed to facilitate mapping instruction. As the first grade year unfolds, students should be learning the words *onset,*

2) **Teach students to map rime units**

   Studies show we map rime units, not just words. Children can instantly recognize rime units within words like *ip, ut, um, ot, een, ame, ake,* etc. Rime units facilitate mapping and help with sounding out multi-syllabic words. In Chapter 5 we learned that rime units can play a key role in early reading but also support more advanced fluent word recognition as

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2You could explain how onset means the beginning of something like the onset of a storm or the onset of a cold. Then go on to explain how an onset of a syllable is the beginning part that is before the vowel, and onsets may have one, two, or three letters. The concept of onset is very concrete and can be learned by young children.

3ARL uses the term “Decoding Key” for phonogram.
evidenced by their role in the consolidated alphabetic phase. Appendix F lists rime units for you to use in your lessons.

As students learn rime units, they can be put on a “word wall.” Word walls have been organized in different ways, but probably the most practical and space-efficient way is by using rime units, not actual words. Any rime unit can represent many different words, which makes good use of limited wall space. The first five sections of the word wall organize the rime units based on the vowels. A sixth section could include common but tricky words (e.g., the, of, one) that do not easily fall into one of the rime unit categories. This word wall would be in alphabetical order within each vowel for easier reference (see Figure 6.1).

**FIGURE 6.1**
SAMPLE RIME UNIT-BASED WORD WALL

With this word wall, there is a quick reinforcement activity that can be used at various times during the day. With a pointer, the teacher can randomly point to the phonograms on the word wall as the children call them out. Also, the teacher should have a set of flash cards with the rime units that have been learned to that point. These flash cards could be used in large and small group situations (see Chapter 12 on the effective use of flash cards).

**Use phonemic awareness activities on rime units.** In order to get students to map rime units to permanent memory, teachers should do phonemic awareness activities on the rime units. This will help students secure the rime units in memory. The following are examples of phonemic awareness activities with rime units. These activities follow the pattern of the *One Minute Activities* (covered in the next chapter). The examples below demonstrate both phoneme deletion and phoneme substitution:

**Phoneme Deletion with Rime Units**
Teacher: “Say im.” (Student says im) “Now say im again but don’t say /i/.” (Student: /m/)
Teacher: “Say ot.” (Student says ot) “Now say ot again but don’t say /t/.” (Student: /o/)

**Phoneme Substitution with Rime Units**
Teacher: “Say ad.” (Student says ad) “Now say ad again but instead of /d/ say /b/.” (Student: ab)
Teacher: “Say ib.” (Student says ib) “Now say ib again but instead of /i/ say /u/.” (Student: ub)

Notice how the teacher has the student manipulate both parts of the rime unit, the vowel...
and the consonant portions. Having students anchor rime units in their memories through mapping will pay great dividends in building a sight vocabulary, sounding out new words, and even spelling. Appendix F lists many common rime units to assist teachers with this activity. Use Appendix F to draw words to create One-Minute Activity-type exercises to map rime units to permanent memory.

3) Introduce words orally first

This idea comes from an article in *The Reading Teacher* by Gaskins, Ehri, et al. (1996/97). Based upon the mapping concept, the authors suggest introducing new words *orally first*. Rather than introduce a word in print first, you first present the word orally. Then, you direct attention to the various sound properties of the oral word (e.g., how many syllables, beginning, middle and ending sounds, etc.). So, when you introduce a new word, whether in a story, a spelling list, or as a vocabulary item, have children concentrate on the oral properties of the word before seeing it in print. Then, when they see the printed form of the word, they are in a much better position to map the oral phonemes of the word onto the written letters used to represent that oral word. For example, consider a first grade teacher introducing a new word:

One of the new words in our story is *street*. How many syllables are in *street*? That’s right, one. Okay, how many phonemes? Wow, five, you guys are great at this. What is the first sound you hear in *street*? That’s right. What’s the last sound you hear in *street*? Good. What is the second sound you hear? Yes, and how about the third? Great!

Now that you know the sounds, let’s look at the letters that are used to spell the word . . . (the teacher then shows them the word and points out the connections between the printed word and the oral sounds in the word, or has the students point them out).

It is not necessary to ask about every possible phonemic element in the word. You can just sample some phonemic elements to prepare them to remember the word once they see it. Because beginning readers and weak readers tend to notice beginning and ending sounds, and not medial sounds, it may make sense to focus somewhat on the sounds in the middle of the word. A great time to use this technique is when a student gets stuck on a word while reading.

4) Use look-alike words

The Look-Alike Words strategy may be one of the most powerful tools in your bag of tricks to assist word storage. When you do exercises, such as flash cards, word searches, or other activities, use words that look alike (e.g., *black, block, brick, brink, break, brake, braid, blink, brand, bland, blend, blind*). This forces students to attend to every letter in the words they are learning. This powerfully reinforces mapping.

Four of the most common compensating strategies used by weak readers are 1) visual memory, 2) using of the first letter as a cue, 3) the length and overall “look” of the word, and

Later in this chapter techniques are provided for when a student gets stuck on a word or misreads a word.
4) guessing based on context. None of these strategies work with the look-alike words task. All the words used in this activity begin with the same letter, have about the same number of letters, have no context, and “look” alike. This forces students to map and not compensate. Appendix G contains sample groups of look alike words for this activity. You do not need to train every look-alike word in English. Rather, you are training a mental habit, which is to attend to every sound-symbol correspondence within words, to promotes mapping. As this habit develops, children should begin to naturally apply it to other words, rather than compensating. This strategy can be used along with the direct mapping technique described below. Also, this look-alike concept can assist in some of the other strategies in this chapter.

When using a group of look-alike words in a packet of flash cards, eventually students may not attend to the first letter because they already know what it is. To counteract this, combine three groups of look-alikes together after they are proficient at the individual card packs. Grouping a pack of words beginning with the letter b with a pack of d words would be a good idea to force attention to the b/d distinction.

5) Mapping so-called “irregular” words

Given our understanding of mapping, we may want to avoid the term “irregular word.” Instead, we should talk about irregular letter-sound connections. Most “irregular” words have only one irregular letter/sound connection. Consider the “irregular” word said. The letters s and d perform their jobs just fine. The ai represents only one phoneme. There is an irregular relationship between the ai and the sound it makes. In the word “island,” five of the six letter-sound relationships are normal. Only one letter is irregular (s is rarely silent). In the past, students were encouraged to “just learn” irregular words, through some type of visual memorization. Researchers now know that we store irregular words in a similar manner to the way we store regular words. We use the normally performing letter-sound combinations to “anchor” those irregular words in memory. Researchers call this a “phonological framework,” which means noticing and anchoring the stable or regular letters and phonemes within the word. Then, the reader makes a mental note of the irregular element of the word. Only a tiny fraction of “irregular” words are off by more than one phoneme (e.g., said is off by two letters, but only one phoneme). Unfortunately, some of the rare exceptions happen to be words children need to learn early in their careers, such as: one, none, once, of, and the suffix -tion. These words (or parts) are inconsistent by more than one phoneme.5

The instructional implication of this is that we should point out the regular elements within all words (which many teachers already do). This will help anchor words in memory. Appendix I has dozens of irregular words for word study purposes.

6) Do Direct Mapping through the use of word study questions

5Rarely do words have multiple “violations.” Examples are aisle, isle, iron, tomb, sugar, ocean, tongue, rhythm, stomach, bouquet, suede, chauffeur, ukulele, and colonel. Most of these are not first or second grade words, however.

6Some researchers have used the term direct mapping to describe the process we are calling word mapping (e.g., Rack, Hulme, Snowling, & Wightman, 1994 in the bibliography). Most teachers, however, are unaware of this usage so I’m “re-using” this educationally obscure term to refer to a specific word-study strategy that directly
Years ago, Gerald Glass developed Glass Analysis. It involved a method of asking students questions about the structure of words. The questions had to do with letters and sounds, and to what Glass called clusters, (i.e., rime units, blends, digraphs, prefixes, suffixes). His word analysis activities took two forms. One was phonics. In this phonic analysis, the teacher shows the student a card with a word and asks “what does the letter t say?” or “in the word brick, what does the br say?” It is not this type of word analysis that interests us, however. It is Glass’ other form of word analysis that directly supports the mapping process.

This second type of word analysis used by Glass was 30 years before its time. It directly taught children to map! This “direct mapping” (not a term Glass used) started with the oral word and had the student “map” the oral parts of the word onto the printed letters of the word. For example, the student is presented with a card on which is written the word best. The teacher asks “In best, what’ makes the /st/ sounds?” then “What makes the /b/ sound?” then “What makes the /e/ sound?” and “what makes the /s/ sound?” The teacher says the sounds and the student indicates the letters onto which those sounds map. This was also done with the “clusters” (rime units, blends, digraphs, etc.). For example, when holding up a card with the word sharp on it, the teacher may say “What letters say /arp/?” (the teacher says the sound made by arp, not the letters) or “What says /sh/.” Thus, in this procedure, the teacher has the students focus on a part in the oral word and asks them to connect those oral sounds to the letter structure of the word. This is the very essence of the word study component of mapping!

Glass Analysis did not directly incorporate phonemic awareness. However, a helpful modification can be made to the Glass technique that incorporates phonemic awareness. Before presenting the card with the word, have the student orally segment the word. Maybe even do 1-2 quick manipulations (e.g., delete a sound or substitute a sound).

Teacher: Say all of the sounds you hear in brush.
Student: /b/ /r/ /u/ /sh/
Teacher: (Holds up a card with the word or writes it on the board) Good, now in the word brush, what makes the /u/ sound? (Do the same with some or all of the other sounds or “clusters” of sounds, e.g., “What says br?”)

The teacher should present the sound/letter connections to be mapped onto letters out of order. This forces the student to do phoneme isolation (see next chapter). This means the student must be able to determine the position of the sound in the word (i.e., isolate its location). If you do the analysis in order, you remove some of the phonemic awareness that will assist in the mapping process. Present the analysis questions randomly. Also, be sure to present “clusters” (blends, rime units, etc.), together and separately (e.g., “What says br?” [later] “What says r?”).

With this direct mapping technique, the child begins with a focus on the oral phonemes because you start by segmenting the word. Then, the teacher draws attention to the connection maps the oral sounds onto the printed letter string (hence the term direct mapping).

Notice the wording, “What makes . . .” or “What says . . .” as opposed to “What letter says . . . ” or “What two letters say . . . ” This way, the student must determine which letters are used to represent the sounds you say. For example, you say, “In soup, what says ou?” The student must know the ou sound is represented by two letters.

Remember that the letters between slash marks represent the sound those letters make, not the letters themselves.
between the phonemes the student just segmented and the letters that are used to represent those sounds. Thus, this is a very “direct” method for teaching mapping/word study. This whole process assumes the student has sound-symbol skills and phonemic awareness skills (at least phonemic segmentation, see the next chapter).

A major criticism of the old Glass Analysis method was that there are too many questions and that the lessons were long and boring, for both student and teacher. I’m suggesting some important modifications to the old Glass Analysis technique to avoid these criticisms. First, the phonics portion of the program is eliminated. That’s the part described above in the first paragraph of this section (phonics can be taught via other methods). Only the “mapping” portion of the program is retained. This cuts the time aspect of the old Glass method in half. Second, I’d suggest paring down the time even more by using this technique about 2-5 minutes per lesson. This may involve only 4-10 words per lesson, depending on student proficiency. Third, teachers should not feel the need to highlight every possible combination of letters and sounds in every word (which the Glass method did, making the lessons tedious). Finally, the pacing of the lesson should be as quick as the student can handle, which increases the number of reinforcements in the time allotted, and keeps the activity fresh and interesting.

You cannot train every word this way. There are thousands of words kids need to learn to become proficient readers. Rather, you are training a mentality. You are teaching students a way to approach words so they more naturally map new words to permanent memory.

This direct mapping technique can be especially helpful in mapping words with irregular sound-symbol combinations (see Mapping “irregular” words, above). Direct mapping allows students to see what combinations of letters are used to represent oral words, regardless of whether they are regular or irregular.

Direct mapping helps students apply both their phonemic awareness skills and their sound-symbol skills to actual words. Again, the goal is to map those words to permanent memory. In addition to a formal demonstration and practice with a few words a day, teachers can use this technique informally at other times. A great time to use this informally is when a student becomes “stuck” on a particular word. A combination of the analysis of the word structure along with the time spent on this process, even though brief, should increase the likelihood that the word will be remembered in the future. This technique can be combined with other techniques, like oral spelling (see below), which could logically follow this method using the word(s) just analyzed.

The direct mapping technique is rather easy for students because they have the letters in front of them. They can “cheat” in a sense, by relying on their phonics skills. However, you are developing a “mentality.” You want children to be able to listen for the individual sounds in words (which you present) and “map” them onto the letters on the page.

7) The “backward decoding” technique

Another informal technique is to have children sound out words from back to front. Backward decoding activates the reader’s onset-rime skills and assists in word study. For

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Students are more likely to remember words when they’ve mentally elaborated on them.
example, let’s say a student sees the word *sent*. Cover up the *s* and the student says *ent*. Then uncover the *s* and the student says *sent*. Teachers have done this for years with single syllable words. I’m suggesting we use it with many multi-syllabic words, too.

*Why this works.* In my workshops, I do the following demonstration. I give teachers 20 seconds to write as many words they can think of that rhyme with *at*. After 20 seconds, they feel they could have come up with more words if given more time. Next, I have them write as many words as they can that begin with *m*. Again, at 20 seconds, they are on a roll. Twenty seconds is not enough time. The third time, I ask teachers to write down as many words as they can that have a short *e* in the middle (e.g., *get*). They are instructed that they must not turn it into a rhyming task (e.g., *get, yet, met, set*) because we already did the rhyming demonstration. After 10 seconds they start groaning. By 20 seconds they feel a sense of relief that the task is over. It is extremely difficult to rapidly recall words based upon a middle vowel sound. Finally, I give them 20 seconds to write words that end with *t* (again they are told not to turn it into a rhyming task). This is also extremely difficult. What they learn from this demonstration is that our mental recall system for oral words is organized according to first sounds and rhyming patterns. Our memory system is *not* organized by isolated middle sounds or isolated ending sounds. So with a word like *sent*, you cover up all but the *s*, the student says *ent*. Now all the words that rhyme with *ent* are “primed,” meaning they in a higher state of readiness in the memory system. Adding the *s* at the beginning activates the word *sent* with relative ease. Let’s contrast this with the traditional phonic left-to-right decoding.

Phonics teaches students to decode from left to right. This seems perfectly logical, because we read from left to right. However, despite the apparent logic, it may not be the most efficient way. Consider when a first grader sees the word *tap* for the first time. The phonic left-to-right approach would suggest starting at the beginning with the /t/ sound. So far, so good. We learned from the demonstration I described above that the first sound is a critical cue in our memory system. In the phonic approach, the next step is to sound out and blend the first and second letters: *ta–*. Do you notice what is happening here? The traditional phonic left-to-right decoding splits the rhyming portion of the word. This nullifies the other important cue for verbal memory activation. By splitting the *ap*, the student loses the benefit of a powerful verbal organizational principle already built into our memory system. As logical as left-to-right decoding may seem, it is not as efficient as preserving the rhyming part of the word (i.e., the rime unit). By contrast, when we use the backward decoding technique, we capitalize on both forms of verbal organization in our memory system: first sound and rhyming pattern. Unfortunately, phonic decoding uses the first powerful cue and throws away the second.

As mentioned, backward decoding can be used with many multi-syllabic words. Let’s say a student sees the word *carpenter*, but doesn’t recognize it. Have the student cover up all but the final rime unit—in this case *er*. The student says *er*. Then, expose the onset, and the student says *ter*, then reveal the next rime unit, *enter*, then the next onset, *penter*. Then the next rime unit, *arpenter*; then finally the next onset, *carpenter*. For many multi-syllabic words, children will do better with this technique than the traditional left to right decoding. This approach involves less guessing, especially guessing based upon the first letter and the length of the
word (typical compensating strategies). It also draws attention to the internal structure of the word in a different way than the traditional left-to-right decoding. This technique does not work well with a fair percentage of multi-syllable words. You must use your judgment and decide which words are appropriate for backward decoding and which are not.

When my son Brendan was in first grade, I taught him the backward decoding technique. I was surprised to see him reading his science textbook in fourth grade, covering up some difficult, long scientific words with his thumb and decoding them back to front!

Backward decoding works well combined with the “Give students the vocabulary of mapping” technique above. If they have the vocabulary, you can say, “When you approach a new word, cover the whole word except the last rime unit. Then uncover the onset . . .” etc.

8) Highlight rime units and syllables in words

This technique draws a student’s attention to the structure of the word, and will minimize guessing. When children guess, they use the overall “look” of the word as a cue. They don’t take account of every letter or syllable. But when you highlight the internal structure of words, you increase the likelihood that they will pay attention to the letter sequence. The simplest way to do this is to underline the rime units in words you present to children.

sat him stack De·cem·ber cam·cor·der

Another technique built into the examples above is that all the multi-syllabic words have the syllables separated by a dot. This breaks the word down for students. Weak readers often sound out the first syllable of multi-syllabic words and gloss over the rest.

This assumes you’ve explained the highlighting and the students make use of it. Another suggestion is to use a yellow highlighter on rime units. If you are introducing words on a chalkboard or whiteboard, use a different color for the rime unit than the rest of the word. If you are more acclimated to the computer, there are many possibilities for highlighting rime units. You can use the “format type” command in your word processor and make the onsets gray instead of black, so rime units stand out:

car·pen·ter ye·ster·day stu·dent af·ter·noon

Another idea is to put rime units in uppercase. This way, students have no choice but to notice the internal structure of the words because of the way the words are printed:

sAND nICE wEST cAT·ER·pILL·ER AF·ER·nOON

Notice how unusual words look when printed this way. This kind of technique is quite contradictory to the classic “whole word” approach used for over a century. But that approach incorrectly assumed that words are stored based on visual memory. While children will never read text printed this way, this exercise forces them to attend to the letter sequence, which is necessary for mapping.

9) Use oral spelling to reinforce mapping

Oral spelling bees in school seem to have gone the way of the 8-track tape player because of self esteem concerns (poor spellers were always eliminated early). I am not advocating the reinstatement of the traditional classroom spelling bees. However, I strongly encourage the use
of oral spelling as a tool in a teacher’s repertoire. Used as an informal technique, teachers can have students orally spell new words or words that are difficult for them to remember. This can be done with the whole class, a small reading group, or even with individual students. Oral spelling can 1) reinforce a student’s phonemic awareness of a given word, 2) reinforce the sound-symbol relationship, and 3) help him or her make the word a familiar letter string (which helps spelling and reading). One idea is to have students work in groups of two as “study buddies,” quizzing one another with spelling words orally. Even weak spellers can do this because they will be looking at the spelling words when they are quizzing the other student. Be sure to have them review past words, not just this week’s spelling list.

10) **Oral decoding (i.e., identifying orally spelled words)**

    Spell a word aloud and the student must identify the word based on your oral spelling. This reinforces orthography and therefore orthographic memory. This is different from oral blending (see Chapter 7). Oral blending is when a student identifies words after hearing the **sounds** of the word. With oral decoding, students hear you say the **letters**, not the sounds, and have to determine the spelled word. You can use words from the weekly spelling lists, words the student is often stuck on, new vocabulary words, or in any other way that will reinforce the student’s reading and spelling. Again, this reinforces orthography, and therefore mapping.

11) **Invented spelling can reinforce mapping**

    Invented spelling involves having students attempt to spell new words using sound-symbol and phonemic awareness skills. For a student in kindergarten or early first grade, **cat** may be spelled **kat**, or **knit as nit**, because that is how those words sound. Of course, students must eventually learn the correct spelling. But having them try to spell words independently sharpens both sound-symbol skills and phonemic awareness. “Invented spelling” has been criticized because some teachers did not hold students accountable for the correct spellings of words. But an inappropriate use of this technique should not negate its appropriate use. In kindergarten and early first grade (and sparingly in second and third), invented spelling is a great tool for both phonemic awareness and sound-symbol-skills. After students have attempted a new word, teachers should be insisting on the conventional spelling of that word, as well as common words and words already covered in the school’s spelling program. However, when a student comes to a new word he wants to write, he should be encouraged to try to spell it out on his own, sound by sound. This gets the student to focus on the internal structure of the spoken word, which is the very essence of phonemic awareness. After making his or her best guess, the student gets teacher feedback, highlighting the relationship between the sounds and the spelling. This can work well with the **Introduce Words First** technique described above. When introducing a new word, do the activities suggested in that section and then have the students try to spell it on paper. Then present the word spelled correctly.

12) **Reading nonsense words**

    Have children read about 5-10 nonsense words per lesson. (e.g., **blat, thrept**). To correctly read nonsense words, a student must display good sound-symbol skills and blending. This task is an index of the student’s basic phonics skills. The advantage of reading nonsense words is
that they are less likely to guess based on the first letter and the overall look of the word. Rather, they need to track through the word to get it right. Appendix H provides you with over 3,000 nonsense words so you can work this activity into your lessons immediately.

13) Spelling nonsense words

Have children spell nonsense words (e.g., ap, blim, freep, coaf). To correctly spell nonsense words, a student must 1) listen carefully and be aware of the phonemes he or she is hearing (i.e., phonemic awareness), and 2) use the correct letters to represent those sounds (i.e., sound-symbol skills). Thus, this task reinforces phonemic awareness and sound-symbol skills, two of the three skills used in mapping. The advantage of spelling nonsense words over spelling real words is that the student is forced to use both phonemic awareness and sound-symbol skills. When spelling real words, students may be able to bypass this if they’ve had past experience with any given word. One suggestion is to have students spell five nonsense words per lesson (large or small group lesson). This way, you sharpen their skills without investing too much time in this activity. Appendix H lists over 3000 nonsense words to support this activity (see Appendix H for more explanation).

If you use this technique, be aware there may be two or more correct answers for some nonsense words. For example, freep and coaf could also be spelled frepe and cofe (but not frep or cof). Give students credit for alternative spellings if they are phonically accurate.

14) Spelling irregular words

Irregular words are words that break phonic rules. However, they include many very common words. Getting students to spell irregular words reinforces orthography, that is, the correct letter string used to represent that specific word. Like other techniques in this chapter, it is essential that students have been progressing very well in their phoneme level phonological awareness skills. The goal of spelling irregular words is to have them learn the precise spelling of those words. This will assist in turning those irregular words into familiar letter strings. Once familiar, they are instantly recognized.

Appendix I contains over 300 of the most common irregular words to use for this activity. Words with an asterisk are Dolch words. It will be important that students can spell these Dolch words accurately before moving on to tackle the other words in Appendix I.

One trick is to give the students a mnemonic pronunciation to guide their spelling. An example would include teaching them to say/spell Wednesday as wed-ness-day (we pronounce it like Wenzday). Obviously this alternative pronunciation is designed to match the spelling pattern. There is no fear that it will replace the student’s oral pronunciation the rest of the time! Other examples include iz-land for island, an-chore for anchor, and cole-oh-nel for colonel. While this technique does not work for the spelling of all irregular words, it works for many. The bottom line is that you want words to become familiar letter strings, and knowing the correct spelling of any given word goes a long way to making it a familiar letter string. This technique can be used in conjunction with four other techniques mentioned above.

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10Dolch words represent the 220-320 most common words in printed English. Only those Dolch words that are irregular are included in Appendix H.
namely mapping irregular words, oral spelling, oral decoding, and spelling nonsense words.

15) Analysis of word structure

Have students identify the onsets and rime units in single and multi-syllabic words. This should be done both verbally and in print. For example, ask a student how many syllables are in a word. Or, you can ask him or her to identify any onset(s) or rime(s) in a word. In print, have students underline the rime units, and circle the onsets. Do not have them do it in the same order each time or else they will guess the last feature of the word by process of elimination. You can give them a list of words, or you can have them structurally analyze an entire sentence.

I’m reluctant to include syllabification as part of this activity. Syllabification can be very tricky. Even dictionaries do not always agree on syllabification. Consider the words hopping and hoping. Hopping does not have two separate p sounds. The second p exists to indicate that the o is short, not long. The double p in hopping sounds the same as the single p in hoping. Thus, hopping should be broken up ho/ping (as awkward as that looks), just as hoping is divided as ho/ping. Some may argue it should be hop/ing. Say it both ways: ho/ping vs. hop/ing and I suspect you will prefer the first. Even if you do not, we must be aware that often a consonant functions as both the last sound in one syllable and the first sound in the next syllable. That double-duty is one reason why the syllable divisions in printed words are tricky. If you want to use syllabification of written words as part of this activity, you can have students draw lines between syllables. But you must teach them about the “trickiness” described here. Sometimes, they may put the line through a consonant, indicating that it functions as the end of one syllable and the beginning of the next. Here are examples:

```
car / pen / ter  trouble  stand / ard  desk
wash / ing / ton  never  splash  spe / cial
```

Analyzing the structure of words helps students to focus on the sound sequence that is present in oral words and the corresponding letter sequences in the printed form. This fosters the word study aspect of mapping.

16) Making/Breaking Words

There are whole books devoted to this technique. This is actually a phonics technique but it can reinforce the word study component of mapping. Students start out with letters in a bag or container. The letters form one big word (e.g., independent), but the students do not know what the one big word is. They try to see how many words they can make from the set of letters they are given, including trying to figure out the big word. They write down each smaller word they make to keep track. Because of the ongoing interaction with the internal structure of words, this supports the word study portion of orthographic mapping. It also reinforces sound-symbol and phoneme awareness skills. A simple way for teachers to do this

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11Do not confuse this technique with the “Highlight phonograms and syllables in words” technique described above. In the previous technique, the teacher highlights the structure of the word. Here, the student takes the active role.

12Say hopping carefully and you will see we don’t say hop/ing (i.e., we don’t make the p sound twice).
is to type out words in large type and put a space between each letter, like this:

```
YESTERDAY INVESTIGATOR
TELEVISION HOUSEBOAT
```

You should use type larger than this. Cut up the letters (they don’t need to be perfect cuts) and give them to the students. A practical way to organize the words is to use one small Ziploc-type bag to hold the letters for each word. Also, there are computer programs that can be used for this activity.

17) Words Their Way.

The Words Their Way program is a research-based spelling/phonics program. Words Their Way does not deal extensively with phonemic awareness, but it focuses on orthography. Orthography refers to the correct spelling of words but also is the study of patterns in written words. This program teaches the developmental stages of spelling. These stages roughly parallel the development of sight word learning (i.e., mapping) described in Chapter 5. Words Their Way helps with the word-study aspect of the mapping process and is therefore highly recommended.

“EXTREME” STRATEGIES FOR REMEDIAL READING ONLY

While the following suggestions may seem unusual, keep in mind their purpose. If you are working with students who have developed compensating habits, you need to break them of those habits. First, any difficulties in phonemic awareness or sound-symbol skills must be corrected. However, they may not apply their newly developed phonemic awareness skills to reading words, because their old habits get in the way. So, these techniques promote (or force) them to attend to the internal structure of words.

18) The reversed sentence reading technique

This must not be confused with the “backward decoding” technique mentioned above. That technique is a method to sound out words. This technique is designed as a way to prevent guessing based on context. The “backward decoding” technique can be taught to all students while the “reverse sentence” technique would be reserved for compensators who need to break the habit of guessing based on context.

The reversed sentence technique is very simple and direct. Before having a student read a sentence the normal way, have him or her read it in reverse order, starting with the last word and working toward the first. This removes the context as the student identifies the words.

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13One is Word Maker (from Don Johnston, Inc.) for younger students and Text Twist (from www.GameHouse.com) for older students. Be advised that Text Twist includes some inappropriate words in their database of possible words, although it does not include profanity.

14This is simply an old fashioned proofreader’s trick. Proofreaders long ago noticed that we are less likely to catch typographical errors when we are caught up in flow of the meaning of the sentence.
Then, after correctly identifying each word in the sentence, the student then reads the sentence in its proper order, likely getting every word exactly right. Again, use this technique only with students who are weak decoders who rely on context to identify words. It will force them to use word identification strategies more conducive to word study.

19) **Use all capitals and other forms of presenting words**

Printing or writing words in all capitals decreases the likelihood that students will try to guess based on the “look” of the word. It increases the chances students will attend to the letter sequence, which is central to mapping. During a lesson, present 5-10 words for students to read in all capitals. Doing so helps them train the habit of attending to the letter order in words. For example:

```
HELP      CARPET      ELEPHANT      RED      WINDOW      CAME
```

Another (rather unusual) suggestion is to write words in a vertical orientation (Figure 6.2). This also forces students to attend to the letter sequence and not the “look” of the word. This strategy springs from our understanding of mapping and the concept of developing familiar sequences of letters. At first, presenting letters in all capitals or vertically may be challenging. You will be surprised, however, how quickly students adjust to this. Students who do not adjust well are likely to be students who struggle with mapping.

```
  w s c t p c a t f
  i t a r l r b h r
  s o m e a e l i i
  h r e e c w e n e
  e r s e k n a
  d
```

**FIGURE 6.2**
SAMPLE WORDS PRINTED VERTICALLY

You can combine the use of uppercase letters or printing words vertically with the look-alike technique mentioned above. This will make it even harder for a student to compensate and will encourage students to focus on learning letter strings.

20) **Reading sideways and upside down.**

Take paragraphs, sentences, word lists or flash cards and present them to the student rotated 90 degrees counterclockwise. Have the student try to read the words this way without letting him turn the paper or tilt his head. This will prompt the student to carefully consider the letter sequence in order to respond correctly. Sometimes rotate the text 90 degrees clockwise, just so students don’t get too good at the other orientation and start compensating again. Finally, you can turn the text upside down and have the student read that way, with similar effect. As unusual as this strategy sounds from the perspective of the classic reading methods, it must be borne in mind that this technique gets the student to focus on the sequence of letters, which is the key to the word study aspect of mapping. This strategy is designed to keep the student from guessing based on the first letter and the “look” of the word. Note this is quite different from the vertical orientation mentioned above. In that technique, the letters remain
right side up, but the words are vertical. In the present technique, letters and words are both in an unusual orientation.

21) *Multiple font reading*

With modern computers, we have the ability to alter type for instructional purposes. Print word in isolation or sentences, with different fonts per word (if a word is repeated, make sure it is in a different font). The more ornate or unusual the font, the better this will work, so long as the letters are clearly identifiable. Like other strategies in this section, the goal is to get students to attend to the letter sequence, not the visual aspects of the word. This may be too easy for some older students, but may be helpful for younger students. Samples include:

Words in isolation:

| stand | meet | wasl | calculator | bridge | stairway |

Words in sentences:

The quick brown fox jumped over the lazy dog’s back.

22) *The Compulsory Phonic Decoding Technique*

This may seem similar to the previous two approaches, but is quite different and has its own utility. Weak readers often combine context with partial letter information to guess a word. They don’t actually sound out the whole word. I routinely see students read lunch for laugh, expect for expert, and curtain for certain on one of the reading tests I use. On that test, they read from a list without context. Clearly they are not attending carefully to the internal structure of the word. The compulsory phonic decoding technique makes them do just that. Using an old research technique, described in Chapter 4, print words so that they look unfamiliar to the students. Printed this way, they must be sounded out. Print words with every other letter in uppercase, such as:

mUsT flsHiNg hAnD nEvEr wHeThEr sToRaGe

It is important that you present words this way out of context. Context can make it too easy for them to guess and you may lose the benefit of this exercise. If you’d like to force more attention to phonics on connected text, there is another old research approach that can be used. Print sentences or paragraphs without spaces between words, like this:


Everyoneaboardtheshipwasgettingworriednowthattherumoroftheapproachingstormhadcirculatedamongthetourists.

When students get used to such presentations of words, combine the mixed case words technique and the technique of printing sentences without spacing between words. Then, add to these the use of nonsensical sentences (to reduce the benefit of context), and you can present students with sentences that absolutely force them to use phonics:

ThEfArMeRwAlKeDhIseLePhAnToTheToaDsToOl.
These words look nothing like what kids are used to. They can’t cut corners by guessing. I’ve encountered dozens of students over the years who have decent phonics skills (based on sounding out nonsense words like *flish, stroog*, etc.) who do not apply those skills to real words. This is because they guess without tracking through the whole word. The various *compulsory phonic decoding* techniques mentioned here present words in such an unusual way that students are *forced* to sound them out, attending to every sound-letter combination. These forced letter-to-sound associations promote more careful word study and are intended to break the habit of impulsive guessing. As difficult as the sentences printed above may seem, you will be surprised how quickly students get acclimated to this and are ready to move on.\(^{15}\)

**PROVIDING FEEDBACK DURING ORAL READING**

One conclusion from the National Reading Panel took me by surprise. They pointed out that while research showed that oral reading practice with feedback leads to reading gains, silent reading did not. A little reflection helps us understand why this is. If you read orally and get feedback from a teacher, you develop a more precise command of your reading. If you read silently, you may be making all kinds of mistakes and not know it. You may even “practice” your mistakes by repeating the wrong pronunciation silently and no one knows it.

Other research has shown that oral reading with feedback resulted in better reading skills than oral reading without feedback. That’s no surprise. What may be surprising is that oral feedback that corrects *every* mistake was more effective than oral feedback that only corrects the student when the mistake affected the meaning. In fact, when oral feedback was used only when the reading miscue affected the meaning, it was not much more helpful in improving reading ability than when no feedback was provided at all! How could this be? One guess is that oral feedback for every mistake helps hold students accountable for what they are reading. By contrast, when feedback is only given when mis-readings affect the meaning, the student is not held accountable for accuracy and can gloss over many words, so long as their mis-readings don’t affect the meaning. These two approaches to feedback develop two different mental habits. One promotes accuracy and attention to detail while the other promotes “just getting by.”

When I tell teachers about this research, they say, “If I had to correct every oral miscue, I would be correcting the student constantly.” There are two responses to this. First, if the student is making that many mistakes, he is reading material above his reading level. The teacher should use easier reading material to reinforce his reading skills.\(^{16}\) Second, it may be true that initially there would be many corrections. However, you are developing a new mental habit. Eventually, the amount of feedback will diminish as the student’s accuracy increases.

\(^{15}\)Ancient writings, such as ancient Greek, were written in all capitals and without spaces between words. The ancient Greeks obviously got used to it!

\(^{16}\)There is a helpful old learning disability “trick” for students with reading difficulties. Tell the student ahead of time that he will be reading paragraph number two during class. Go over it with him and let him practice it. Then, when the class is reading, select a student for the first paragraph and select the student with the reading disability for the second (as if randomly), and he will be as proud as can be that he read like everyone else.
What to do when a student gets “stuck” or mis-reads a word during oral reading

What should you do when a student gets stuck on a word, or misreads a word during oral reading? This section does not include anything new, but integrates information discussed earlier in this chapter.

Traditionally, there are three things a teacher can do when a student is reading aloud and gets stuck on a word: 1) have the student phonically sound out the word, 2) have the student guess based upon contextual, linguistic, or picture cues, or 3) simply tell the student the word. Based upon the techniques mentioned above, the teacher can expand her toolbox. When a student is stuck on a word during oral reading, teachers can:

- **Introduce the word orally first.** Have the student cover up the difficult word. Then do oral analysis of the word before exposing him again to the printed form.
- **Backward decoding.** Have the student sound out the word in reverse order, chunked by onsets and rimes.
- **Direct mapping.** Say the oral parts of the word and have the student identify which letters represent those phonemes, rime units or other word parts (blends, diphthongs).
- **Map irregular words.** Point out the regularities in “irregular” words. Then draw attention to the irregular element. Indicate that this must be remembered for future reference.

These techniques all promote permanent word storage. They go beyond just telling the student the word or having the student guess. They also go a step beyond sounding out the word. When a student sounds out a word phonically, there is no guarantee that he will remember the word the next time that he sees it. He may have to sound it out again.

None of these techniques should be used every time a student needs help with a word. Sometimes, it is best to supply the word and move on. In fact, in some cases, supplying the word is the most appropriate technique. For example, children’s literature and basal readers often include difficult names and places, even foreign words. These would not be a top priority for word study. Just supply the word and move on. An exception to this is when the unusual word illustrates a letter pattern the children have been taught. In that case, the word can be used as a teaching tool by drawing attention to those previously learned features.

In a given reading group, you may want to consciously attempt to use each technique mentioned in this section at least once, or even twice. If you use them more than this, it is easy to bog down the group. One idea behind using these techniques regularly is that you are training a mental skill, namely the word study aspect of orthographic mapping. With time, children learn this skill, so you may rely less and less on these techniques. The exception is with beginning readers, who will benefit from these techniques all year. If a word is a new word, let students try to sound it out. If a student misses a word more than once, then the *oral word first* or *direct mapping* approaches would be appropriate. With careful use to these techniques, they will become a natural part of reading with students.

**MAKING EFFECTIVE USE OF INDEPENDENT WORK TIME**
Some of the techniques in this chapter can boost student learning during independent work time. If the students are familiar with the techniques listed below, they can be used during independent work time. Some can be done alone, and some require a “study buddy.”

**Independent tasks that can be used alone:**

- **The “backward decoding” technique.**
  Encourage students to use this when they are stuck on a word while reading independently.
- **Use invented spelling to reinforce mapping.**
  When students are doing independent written work, and when they want to spell previously untaught words, encourage invented spelling in first and second grade. During second grade, however, you want to transition them to a dictionary for these situations.
- **Analyze the structure of words.**
  Provide students with sentences for them to analyze.
- **Making/Breaking Words.**
  This is a great independent activity. Also, the software mentioned can be used independently.
- **Words Their Way.**
  This program has several independent activities built in.
- **Compulsory Phonic Decoding Technique.**
  With proper planning, you can have students read some stories printed this way. Some comprehension questions for them to answer would make this more productive.

**Independent tasks that would be done with a study-buddy:**

- **Do phonemic awareness activities.**
  Have one team of two students at a time use this book during the independent study time. Students get to administer a *One Minute Activity* to their study-buddy. Once students learn this from their teacher, they love to do it with each other.
- **Directly map words using word study questions.**
  If students have done this technique with you enough, they “get the routine” and can do it on others. They each get a supply of words and they take turns being the teacher.
- **Use oral spelling to reinforce mapping.**
  Have students quiz each other orally. Include “old” spelling words on the list.
- **Oral decoding (identifying orally spelled words).**
  Have students take turns spelling a word aloud while the other identifies the spelled word.
- **Spelling nonsense word.**
  Give students lists of nonsense words and have them take turns being the teacher.

**SAMPLE LESSON PLAN OUTLINES**

I once watched a practice session of a very successful high school basketball team. During the first 15 minutes of practice, not a word was spoken. These players knew the routine and went from one drill to another, with no drill lasting more than 2-3 minutes. Players were in
constant motion. Like clockwork, each player had extensive practice in dribbling, passing, shooting, and defense. They had more opportunities to practice these skills in 15 minutes than most teams would get in an hour. I thought this could be adapted to small group instruction. Imagine the first 6-8 minutes of a small group time, moving through various fast-paced activities that allow multiple opportunities of skill reinforcement. Consider having students quickly read 8 practice words, spell 3 irregular words, read 5 nonsense words, spell 3 nonsense words, read a small packet of look-alike words, orally spell 4 words, read a sentence in reverse order, do half of a One Minute Activity, have students identify three words you spell orally, etc., etc. With a little planning and the techniques in this chapter, teachers can build such a rapid-fire routine that will dramatically increase the number of exposures and reinforcements to various words and skills compared to what students would ordinarily receive.

Below are some very basic lesson planning outlines, one for large group, one for small group, and one for remedial purposes. These represent more conventional plans, but you can create your own rapid-fire routine and rework these plans. Use Appendix D to assist in lesson planning. Also keep this manual handy because you’ll be using the One Minute Activities.

Whole class or small group (first grade)

- Start with a One Minute Activity at the appropriate level (1 min.)
- Briefly teach/review the next level in their phonological awareness skills (2-5 min.)
- Review mapping vocabulary, introduce new term(s) if needed (1-2 min.)
- Review rime units on word wall. Introduce new rime unit with related words (3 min.)
- Introduce new words in story (2-4 min.)
  - Use “Introduce words orally first” on 1 or 2 of them
  - Select 1-3 other word study techniques from earlier in this chapter

- Have students read story, stopping to discuss story/monitor comprehension (10-15 min.)
  - (During reading, use 2-3 of the techniques above to address mis-readings)
- End with a One Minute Activity at the appropriate level (1 min.)

Small group – remedial

- Start with a One Minute Activity at the appropriate level (1 min.)
- Briefly teach/review the next level in their phonological awareness skills (2-5 min.)
- Review mapping vocabulary, introduce new term(s) if needed (1-2 min.)
- Review rime units on word wall. Introduce new rime unit with related words (3 min.)
- Do another One Minute Activity (1 min.)
- Word Study: Select 1-3 word study techniques from this chapter (see Appendix D)
- Introduce new words in story (2-4 min.)
  - Use “Introduce words orally first” on 1 or 2 of them
- Have students read story, stopping to discuss story/monitor comprehension (10-15 min.)
  - (During reading, use 2-3 of the techniques above to address mis-readings)
- End with a third One Minute Activity (1 min.)

These lesson plans are samples only. The big difference between these two examples is that
the remedial situation puts more emphasis on One-Minutes Activities and word study. Given what we know about permanent word storage, a good reading lesson will involve:

1) **Phonological/phonemic awareness.** Phonemic awareness should never be considered an extra. It is important for reading skills and is the source of most reading problems. It must be part of the hard landscape of early and remedial reading instruction.

2) **Sound-symbol skills.** This should not be optional. It is essential for sounding out new words and storing words for instant recognition.

3) **Word Study.** Whether you want to teach beginning readers good mental habits for approaching words or break older, weak readers of poor habits, these techniques are designed to promote mapping words to permanent memory.

**Summary**

Orthographic mapping is a process, not a method. However, there are a variety of techniques that promote mapping. These can apply to routine early reading instruction or with older, struggling readers. Some of these techniques can be used to assist students when they get “stuck” on a word. Also, some of these can be used during independent work time in addition to more formal teaching situations. The goal of these techniques is to train a mentality that allows students to approach words using their sound-symbol and phonemic awareness skills to map words to permanent memory. This, in turn, is intended to promote fluent word reading to provide the foundation for good reading comprehension.