Word Detectives

Benchmark School, a school for struggling readers, uses research on decoding to help its students discover letter-sound matches.

Irene W. Gaskins

Research points to a strong correlation between success in learning to read and the ability to segment words into their component sounds and then match those sounds to the appropriate letters or letter patterns (National Reading Panel, 2000). Research also suggests, however, that no one method or set of materials outpaces all others in teaching students phonemic awareness and decoding skills (Stahl, Duffy-Hester, & Stahl, 1998). After all, students learn in different ways and at different rates. Nevertheless, certain research-based principles can help teachers understand how students learn to read words.

Word Learning at Benchmark School

Benchmark School in Media, Pennsylvania, was founded in 1970 as a nonprofit laboratory school to design and evaluate programs for struggling readers between the ages of 6 and 14. The school’s goal was then and is now to create a research-based curriculum that teaches struggling readers the skills and strategies they need to perform in regular classrooms at levels commensurate with their abilities and no lower than the median of their classes. Entering Benchmark students read below grade level but have average or above-average potential. Their reading delays cannot be attributed to primary emotional or neurological problems. Most students enter the school reading at a level between preprimer and 1st grade. All students receive the benefit of a full elementary and middle school curriculum. Currently, Benchmark has 122 lower school students (grades 2–6) and 81 middle school students (grades 7–8).

Throughout the school’s history, teachers have used a variety of methods to help students identify unknown words. By the early 1980s, however, discouraged by the limited success that many of our students experienced with these approaches, we began a research and development project to help us improve students’ decoding skills. The outcome of the research was the development of a schoolwide, systematic decoding-by-analogy program that we called Benchmark Word Identification (Gaskins et al., 1988). We were delighted with the results: The students who were taught to decode by analogy could decode words significantly better than could students of previous years (Gaskins, Gaskins, Anderson, & Schommer, 1995).
Despite the program’s success, however, many students moved on to the intermediate and middle school grades without consistently applying the analogy approach—or any approach—to unlock unknown words. By the mid-1990s, we were again looking for ways to improve decoding instruction. A review of current reading literature yielded two research-based principles that changed the way we teach students to learn words:

- Students learn to read words in four basic ways, each of which is enhanced by a student’s ability to segment words into sounds and to make discoveries about letter-sound matches.

- Students move through phases of word learning. Thus, they need instruction that begins at their current level of proficiency and stimulates progress through increasingly mature phases.

**Four Ways to Read Words**

Research indicates that students learn to read words in four ways: contextual guessing, letter-sound decoding, analogy, and sight (Ehri, 1991). Successful readers use all four methods (Cunningham, 2000). The way a student reads a word depends on the reader's background knowledge and developmental level as well as on the features of the word and the context in which the word appears.

*Contextual guessing.* A student reads most of the words in a text as sight words and uses the sense of the text to guess unknown words. For instance, to guess the unknown word "wagon" in the sentence "Jill’s dog rode in the red wagon," a student needs appropriate background knowledge that will cue retrieval of the word. If the student lacks knowledge of letter-sound relationships, however, contextual guessing is not very reliable. For example, after examining a picture of a body of water and boats accompanied by the sentence "I see the . . .," one of my students read the unknown word as "river" instead of "boat," the correct word. The student ignored the letter-sound matches in "boat" and relied instead on the picture and context to make sense of the unknown word.

*Letter-sound decoding.* Students make letter-sound matches to identify an unknown word. On the one hand, using only one or a few letter-sound matches in a word may lead students to miscall that word—to read "horse" instead of "house," for example. On the other hand, a correct match between just one letter and sound, combined with background knowledge, context, and letter-sound knowledge, is sufficient for some students to read the word "path" correctly in the sentence "He walked down the path."

A more mature level of letter-sound decoding occurs when the reader looks all the way through a word and matches sounds to each letter or letter pattern, then successfully blends those sounds to pronounce the word—for example, in decoding /t/ /r/ /ou/ /t/ as "trout."

Nevertheless, some students may correctly match all the letters or letter patterns to sounds but not make sufficient closure in the blending process to recognize the word.

*Analogy.* Students decode a word by making an analogy to a known sight word. When students encounter an unknown word, we encourage them to think of a word they know with the same
spelling pattern. In the case of "tram," for example, most students think of "am." Students might say to themselves, "If I know 'am,' then I know 'tram.'" Similarly, students might use the known words "can" and "her" to decode "banter." According to Ehri (1991), students must have stored known words in memory—and fully analyzed them—to be successful in using the analogy approach independently. When a student has not fully analyzed a known word, he or she may attempt to decode an unknown word using a known word with a similar but different spelling pattern. For example, the student may attempt to use "am" to decode "stem" or "tent" to decode "flint."

**Sight.** Students read words from memory. Words become sight words through contextual guessing, letter-sound decoding, and analogy. Students enhance their fluency in sight reading through repeated reading, echo reading, and reading many books in which almost all of the words are sight words.

### Phases of Word Learning

Researchers generally agree that developing readers move through several phases of word learning (Bear, Invernizzi, Templeton, & Johnston, 1996; Ehri, 1995). In the **pre-alphabetic** phase, students remember a word on the basis of a distinctive and purely visual cue. Students might identify "yellow," for example, by the two tall posts in the middle of the word, and they might then read "balloon" and "button"—and other words with two tall middle posts—as "yellow."

In the **partial alphabetic** phase, students do not yet use all the letter-sound information in a word. Instead, they remember and apply a few salient letter-sound matches. For example, students might remember the letter-sound matches for only K and N in the word "kitten." These students will successfully decode the word, then, when they read a story about a kitten. A few days later, however, when the students read a book that includes the sentence "Bob went to the kitchen for a cookie," some of them will misread the sentence as "Bob went to the kitten for a cookie."

Students in the **full alphabetic** phase of sight word learning notice and remember all the letter-sound matches in a word. They can decode such words as "film" because they have matched the letters and sounds for F, I, L, and M.

We commonly find mature readers in the **consolidated alphabetic** phase, the final and most efficient phase of sight word learning. Such readers have consolidated their letter-sound knowledge and remember matches between multiletter units and syllabic units. They might match **onset** and **rime** units—in the word "strike," for example—by recognizing in the unknown word the letter-sound matches from the onset of a known word (for example, "strong") and the rime of a known word (for example, "like").

### Becoming Word Detectives

Benchmark teachers who were teaching decoding by analogy hypothesized that rather than identifying the individual letters in an unknown word and matching sounds to those letters—a process known as **fully analyzing**—struggling students might be trying to learn and memorize
each new key word as a unique form (Gaskins, Ehri, Cress, O'Hara, & Donnelly, 1996–1997, 1997). Our literature review convinced us that the more students know about how words are systematically structured to represent speech, the more fluent and automatic those students become as readers (see Adams, 1990, and National Reading Panel, 2000).

A new approach to teaching decoding by analogy, called Word Detectives, grew out of our research (Gaskins et al., 1996–1997, 1997). In this program, we ask students to segment key words into sounds, compare the sounds to the letters they see, and determine which letter or letters match each sound. The job of a word detective is to discover letter-sound matches.

In a lesson to learn the key word "right," for example, the teacher says, "Today we are going to learn the word 'right.' Stretch the word." The teacher and students "stretch" the word /r/ /igh/ /t/ in unison as they all put up a finger for each sound they hear. At this point in the lesson, students are holding up three fingers and have not yet seen the word. After stretching the word and determining the number of sounds, the teacher draws three boxes on the chalkboard and places a card with the word "right" written on it next to the boxes. The teacher then asks students to tell her which letters should be placed in each box to match the three sounds they hear in "right" to the letters they see on the card. Students lose no time in suggesting that they should place R in the first box and T in the last. The teacher says, "We seem to have a problem: There are three letters left and only one box. How are we going to solve this dilemma?"

"I think it takes all three letters to stand for the /i/ sound, just like it took two Ls to stand for the /l/ sound in 'tell,'" replies one student.

"I think I-G-H stands for the /i/ sound," adds another student. The teacher writes "sigh" on the chalkboard, saying, "Let's see if Harry's discovery works." Harry replies, "Yes, S-I-G-H is 'sigh.'" The teacher challenges, "Let's be on the lookout for words with I-G-H to see if Harry's discovery really works."

Teachers find that after students practice this process several times for each key word, as well as periodically review what they have discovered about the letter-sound matches, the words are fully analyzed, locked in memory, and easily retrieved to assist in decoding by analogy (using "right" to decode "flight" or "midnight," for example). Only when a student has fully analyzed all the letter-sound matches in a word will it be stored in his or her word memory, or **lexicon**, enabling him or her to differentiate it from other, similar words. For example, in the early phases of word learning, children frequently confuse words that look alike ("want" and "went," for example) and do not appear to notice the features that distinguish them. Once they have been systematically guided to fully analyze words (matching the sounds they hear to the letters they see), most students are less likely to confuse words.

**What We Discovered**

After using the Word Detectives program for one year, we sought to learn whether the changes to the original word identification program yielded benefits for students (Gaskins et al., 1996–1997). We collected data from two groups of students. The first group had been taught using the Benchmark Word Identification program during the school year preceding our introduction...
of Word Detectives (that is, during the 1993–1994 school year); the second group had been taught using the Word Detectives program in its first year of implementation (the 1994–1995 school year). The same teacher taught both classes, and each class contained 13 students.

Both groups took the Wide Range Achievement Test (WRAT) reading and spelling subtests at the beginning and end of their school year. The reading subtest results demonstrated that students in the Word Detectives group read significantly more words correctly, on average, than did the students in the Benchmark Word Identification program. The Word Detectives group read an average of 63 words correctly, whereas the students of the previous year read an average of 57 words correctly—a 10 percent improvement. The Word Detectives group also spelled more words correctly on the WRAT spelling subtest than did their peers of the previous year, although the difference was not statistically significant.

The Word Detectives program has been in place for several years now, and we have gathered longitudinal data from several cohorts of students. We are using these data to conduct a comprehensive examination of the effects of the Word Detectives program. Preliminary findings corroborate our initial positive results.

**One Goal, Many Paths**

Teaching students to fully analyze words helps them hear the smallest sounds in words and match those sounds to letters or letter patterns. Depending on which word learning phase students are in and on the extent of their knowledge of letter-sound matches, students may choose to read an unknown word through the methods of contextual guessing, letter-sound decoding, analogy, or sight—or a combination of any of these processes. Because successful readers do not use just one method to read words, students need instruction that meets them where they are and develops their awareness of all their reading options.

**References**


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*Irene W. Gaskins* is Founder and Director of Benchmark School in Media, Pennsylvania. She may be reached at gaskinsi@aol.com.

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