FIVE

Word Recognition and Spelling

Monitoring the development of word-recognition ability is one of the most important tasks of teachers in the primary grades and teachers of struggling readers in the upper grades. The broad area of word recognition is complex, however. There are many contributing skills to track, so it is important that teachers have a solid understanding of the skill areas underlying a student's ability to recognize words.

A useful way of organizing both assessment and instruction in this complex area is to divide it into three components: phonics, sight words, and morphological analysis. Let's look at each of these areas in turn.

PHONICS

Phonics refers to the ability to use letter–sound correspondences to derive the pronunciation of words. Good phonics assessments are nearly always individually administered, because the application of phonics skills requires that students produce pronunciations. Teachers obviously cannot monitor pronunciations in a group setting.

Phonics inventories are representations of what we know about the development of decoding skills. They are usually organized to test a set of skills in order from least to most difficult, or to assess a particular skill across examples. They may begin at the beginning—with individual consonant sounds, then single-syllable short-vowel words, then words with consonant blends and digraphs, for example. Keep in mind that we must consider the results of any assessment in light of the number of examples it uses. If a child can read the word *can*, does that mean that he or she can read *pan* and *man*? *Cat* and *cap*? Since individual words become sight words fairly quickly, it makes sense to test a particular skill with multiple probes.

Three phonics assessments are reviewed in this chapter. We begin with the Z-Test, an assessment that can reveal whether a child is able to decode one-syllable words quickly. If a problem is detected, one of the more detailed assessments can be given. The first of these is the Informal Phonics Inventory, which begins at the most basic level of

phonics knowledge: consonant sounds. The other is the Informal Decoding Inventory, which begins with CVC words and continues through two-syllable words.

Z-Test

The Z-Test is a phonics assessment that targets a child's ability to make analogies to known words based on familiar rimes. The word *rime* has a technical meaning in this case. In a one-syllable word, it refers to the vowel and the consonant(s) following it. In the word *cat*, *-at* is the rime; in *date*, the rime is *-ate*. The Z-Test (Form 5.1, p. 131) presents the child with the 37 most familiar rimes, using the same onset, in order to focus the child's attention on the rime itself. The result is a series of pseudowords, all beginning with the /z/ sound. Children who recognize common rimes as word chunks will be able to pronounce most or all of these pseudowords as whole-word units. Students who are not proficient at making such comparisons may be able to pronounce many of the words by blending the phonemes individually. Their reliance on this strategy will be obvious. There are no norms or scoring criteria for interpreting the results of this test. Subjective judgment is required. On the other hand, pre- and postintervention administrations of this simple test will provide an enlightening indicator of improved decoding skills. We recommend timing the test to increase its level of sensitivity in quantifying the child's developing word-recognition processes.

Informal Phonics Inventory

The Informal Phonics Inventory (Form 5.2, p. 134) provides a convenient means of monitoring specific skill acquisition. The first three subtests (Consonant Sounds, Consonant Digraphs, and Beginning Consonant Blends) present children with individual letters or two-letter combinations and ask them to provide pronunciations. Some educators may object to such a task on the grounds that individual consonants cannot be pronounced without attaching a vowel sound. This may be true, but it is of very little importance, and taking such an objection too seriously deprives us of a valid means of assessing phonics knowledge. When children see the letter *b*, for example, they can be expected to say something like "buh." We treat these items as specific, constrained skills. If a child knows them, we do not have to teach them. If a child doesn't, we do.

The next two subtests use real words. On the Final Consonant Blends subtest, the children are scored for their ability to read each blend as part of the real word. Notice that all of the words contain short vowels. This is because short vowels are typically mastered first. However, children need only pronounce the blend correctly to get credit for each item. You will see that some children can pronounce the blend but confuse the short-vowel sounds. We test short-vowel knowledge next. In the Short Vowels in CVC Words subtest, the item is scored correctly as long as the correct vowel sound is read. For example, reading *tim* for *tin* is considered correct. The Rule of Silent *e* subtest is more difficult, because it seems to require that the child consciously apply the rule rather than simply read the words.

We recommend that you use the Informal Phonics Inventory in Form 5.2 in two steps. Use it first as a diagnostic assessment to determine areas on which to focus instruc-

tion. The scoring table will help you identify these areas. After you have provided instruction, you can then use it to track the progress of individual students as they learn specific skills. The chart included in Form 5.2 is designed to help you keep track of skill mastery as you readminister portions of the Informal Phonics Inventory from time to time.

Informal Decoding Inventory

Beginning at a more advanced level, the Informal Decoding Inventory (Walpole & McKenna, 2017) consists of a series of short progressive subtests that follow the sequence in which decoding skills are typically acquired (see Form 5.3, p. 141). The teacher gives only the subtests that are likely to be near a child's level of development. Using available information, such as classroom performance, the teacher starts at the appropriate point and proceeds upward (and occasionally downward) in search of the first level at which mastery has not been attained.

Each subtest consists of two sets of 10 words representing a particular skill. The first set contains real words; the second consists of pseudowords. For example, in the initial subtest, Short Vowels, the first real word is *sat,* and the first pseudoword is *mot.* Including pseudowords provides a second window into decoding and, as in the Z-Test, prevents the possibility that sight-word knowledge will inflate performance. The Multisyllabic Words subtest contains only real words that differ in syllable type. As in the Informal Phonics Inventory, an 80% criterion is used for real words, though a more lenient 60% criterion is used for pseudowords. The teacher weighs these two in tandem. The first test at which the child falls below the criteria becomes the target of instruction.

KNOWLEDGE OF HIGH-FREQUENCY WORDS

Let's begin with a common confusion in terminology. It concerns the distinction between a *sight word* and a *high-frequency word.* These terms are often used interchangeably, but there is a difference. A sight word is any word that an individual reader can read and pronounce automatically, without conscious analysis. Believe it or not, nearly every word in this book is a sight word for you. As a skilled reader, you rarely stop and sound out words. In fact, when you have to, you may become a bit irritated. However, not every word in this book would be a sight word for a beginning reader (e.g., a beginning reader might struggle with the word *could,* but you would not). Thus sight words are individual to each reader.

In contrast, not all of the words in this book are high-frequency words—that is, those words that occur most often in written English (such as *of, but, can,* etc.). There is a tendency to confuse the notion of sight words (which are specific to an individual reader) with that of high-frequency words (which are specific to a language, but are the same for every reader in that language). It is true that all high-frequency words must eventually become sight words if a reader is to be fluent. However, even a reader's initial sight vocabulary must include many low-frequency words, such as his or her last name. Sight vocabularies, therefore, differ considerably from one student to the next (you might be able to automatically recognize the word *could,* but a beginning reader might not), while

high-frequency words are the same for everyone who reads in a particular language. The word *could* is the 68th most frequent word in English, regardless of the fact that you can read it and a beginning reader might struggle with it (Zeno, Ivens, Millard, & Duvvuri, 1995).

Knowledge of high-frequency words as sight words is essential for fluent reading. According to Carroll, Davies, and Richman (1971), 109 of the most frequent English words make up 50% of all words found in reading material for grades 3–8. If you are skeptical, just go back over the preceding paragraph, and you'll note that nearly every other word is a high-frequency word like *as, is her, that,* and *the*. It's no wonder, then, that teachers hope that all of their students eventually master these high-frequency words as individual sight words; without automatic sight-word knowledge of English's most frequent words, no one would be able to read anything fluently.

In order to assess high-frequency words, a teacher must begin with a target list. Primary teachers typically use the Dolch (1936) or Fry (1980) list or some other compilation of high-frequency words. Next, the teacher must decide on an assessment format in order to gain knowledge about how many of these words each child can pronounce automatically, or at sight.

One way—a very efficient one—is to assess children as a group. The format presented below is designed for such a group assessment. Some standardized tests, such as i-Ready, test high-frequency words in this way. The children are presented with row after row of words, each row containing four words. In the first example, the teacher leads the children from one row to the next, instructing them to circle one of the words.

Example 1

Teacher says, "Circle *book*." Child sees row of four words.

pear book bolt napkin

The time saved through group assessment is considerable, of course. However, the accuracy of the results may be compromised, as it often is in group assessments. For example, a child who is familiar with the sound made by the letter *b* will be able to eliminate the first and fourth words of the sample item, even though the word *book* may not yet be a sight word for that child. Reading the word is a higher skill level than identifying a spoken word in text.

In contrast, consider the format presented in Example 2, designed for individual administration. In this case, the teacher shows the child a word and asks for a pronunciation. The words can be presented on flash cards in list form. We recommend placing the words on PowerPoint slides that are timed at 1 second per slide for kindergarten and first grade, and 0.5 second per slide for older students.

Example 2

Teacher says, "Say this word." Child sees flash card.

book

It is important that the teacher remember that a sight word is one that can be pronounced immediately, without analysis. If a student takes more than 0.5 second (1 second in K–1) to produce the pronunciation or perceptibly "sounds it out," then that word cannot reasonably be judged a sight word. In fact, words that are in a skilled reader's sight vocabulary are recognized in less than 0.25 second (Rayner et al., 2012).

It is easy to construct a sight-word inventory once you have decided on which target words to include. Many lists are available. Some include shorter, high-frequency word lists (e.g., the Dolch [1936] list of 220 and Fry [1980] lists of 300 and 600 "instant" words). Some are longer lists that include words of lower frequency. Though these lists were constructed with different procedures, you will see that they have many words in common. Form 5.4 (p. 145) presents Fry's list of 300 instant words in the form of a sight-word inventory. Form 5.5 (p. 152) displays Dolch's list of 220 words categorized by approximate level. Although the personnel at some schools may prefer to construct a simple sight-word inventory based on their reading programs, we recommend using the more popular Dolch or Fry lists. Keep the big picture in mind. A sight-word inventory is a sampling of items; it is not a full examination of a child's sight-word knowledge.

For older students, it is a good idea to use a normed list to compare their results with the results of other students their age. They know many sight words, so it can be difficult to determine whether their sight-word knowledge is hindering their reading fluency and comprehension. The Test of Word Reading Efficiency—Second Edition (TOWRE-2) is a measure of word-reading accuracy and efficiency (Torgesen, Wagner, & Rashotte, 2012). The TOWRE-2 Sight Word Efficiency task is a list of high-frequency words that students read individually in 45 seconds. Raw scores can be converted into percentiles, scale scores, and age and grade equivalents.

Regardless of the list you use, it is important to keep in mind that sight-word knowledge consists of a set of individual words. That is to say, each word is a separate skill! Were you to administer a sight-word inventory, it would therefore make little sense to tally the number of words a child can pronounce at sight, except as a general measure of growth. Rather, each of the words represents a distinct skill—a word worth knowing in its own right. A sight-word inventory, then, is a clear example of a diagnostic test. It provides a specific instructional target.

Essential Words

For older children, it is useful to know what they know about *survival words* or *essential words.* These are words that children (and adults) need to know to survive in the real world. We present two lists of essential words, but these are only a beginning and are by no means comprehensive. Teachers of older students with special needs and of students with severe learning disabilities may need to prioritize the instruction of words selected from our essential-word lists. The first list (Table 5.1) contains an older set of words; the next list (Table 5.2) is an updated version by Davis and McDaniel (1998). There may be others that are important in your town or for particular children. Again, use our lists as a starting point.

TABLE 5.1. The Original Essential Vocabulary

adults only	flammable	noxious
antidote	found	nurse
beware	fragile	office
beware of the dog	gasoline	open
bus station	gate	out
bus stop	gentlemen	out of order
caution	handle with care	pedestrians prohibited
closed	hands off	poison
combustible	help	poisonous
condemned	high voltage	police (station)
contaminated	inflammable	post no bills
deep water	information	post office
dentist	instructions	posted
do not cross, use tunnel	keep away	private
do not crowd	keep closed at all times	private property
do not enter	keep off (the grass)	pull
do not inhale fumes	keep out	push
do not push	ladies	safety first
do not refreeze	live wires	shallow water
do not shove	lost	shelter
do not stand up	men	smoking prohibited
do not use near heat	next (window) (gate)	step down (up)
do not use near open flame	no admittance	taxi stand
doctor (Dr.)	no checks cashed	terms cash
don't walk	no credit	thin ice
down	no diving	this end up
dynamite	no dogs allowed	this side up
elevator	no dumping	up
emergency exit	no fires	use before [date]
employees only	no fishing	use in open air
entrance	no hunting	use other door
exit	no loitering	violators will be prosecuted
exit only	no minors	walk
explosives	no smoking	wanted
external use only	no spitting	warning
fallout shelter	no swimming	watch your step
fire escape	no touching	wet paint
fire extinguisher	no trespassing	women
first aid	not for internal use	

MORPHOLOGICAL ANALYSIS

Morphemes are the smallest units of meaning in a word. The word *cat* has just one morpheme, but *cats* has two (*cat-s*) and so does *cattail* (*cat-tail*). Following are five types of morphemes we want our older students to work with and understand; for older students, we strongly recommend posting an anchor chart in your classroom with these five word parts highlighted, for reference throughout the year.

1. *Prefixes:* Units of meaning that are attached *before* a base word or root (e.g., *pre-*, *in-*). Prefixes can modify the core meaning of a base word or root (*preview* is "to view before"; *inhuman* is "not human").
2. *Suffixes:* Units of meaning that are attached *after* a base word or root (e.g., *-ion*, *-ist*, *-ous*). Suffixes can change a word's part of speech (e.g., *-ion* changes the verb *elect* to the noun *election*).

TABLE 5.2. Updated List of Essential Words

10 items or less
30 days same as cash
911
airbags
alternate route
aluminum cans only
ambulance
asbestos hazard
automatic
biohazard
biohazardous waste
blasting zone
bomb threat
breakable
bridge ices before road
buckle up
bump
business route
by-pass
caffeine
cancerous
cash only
cellular phones prohibited
chemicals
children at play
clearance
construction ahead
consult physician before use
danger
dangerous
deer crossing
delay
deliveries
detour
diesel fuel
directions
dispose
do not bend
do not block intersection
do not enter
do not get in eyes
do not ingest
do not mix
do not take if allergic to . . .
do not take with milk
do not use near water, fire, etc.
dosage
drive in
drive through
drive-up window
electrical hazard
Emergency Medical Services
enter only
escalator
exact change (needed)
exit only
expect delays
expiration
expires (EXP)
explosives
express line
evacuate
falling rock
fasten seat belt
fax machine
fire alarm
fire exit
flagger ahead
flush
for help dial
form line here
handicapped parking
hard hat area
harmful
hazard
hazardous
hazardous area
hazardous chemicals
hazardous waste
help wanted
hospital
ID required
if swallowed, induce vomiting
in case of fire
incinerate
incinerator
infectious area
insert card (ATM)
irritant
keep away from water
keep frozen
keep out of reach of children
keep refrigerated
kerosene
lifeguard on duty
loading zone
makes wide turns
manager
may cause birth defects
may cause dizziness
may cause drowsiness
microwave in use
microwave safe
minimum speed
must be 21 years of age
no jet skis allowed
no left turn
no littering
no outlet
no pagers
no parking
no pets
no photographs permitted
no refunds
no returns
no through traffic
no turn on red
no video cameras allowed
nonalcoholic
nontoxic
nuclear waste
one way
order here
oxygen in use
pay cashier before pumping
pay here
pedestrian crossing
polluted area
prepare to stop
quiet please
radiation hazard
radioactive materials
radioactive waste
railroad crossing
read directions before using
recyclable
recycle
refrigerate
restricted area
restrooms
resume safe speed
right of way
right turn only
road closed
school crossing
school zone
service engine
self-service
shake well
shirt and shoes required
signature
slippery when wet
slow down
soft shoulders
speed limit
stairs (stairway)
stop ahead
subway
Surgeon General warning
take with food
teller machine
through traffic
timecard
time clock
tornado warning
tornado watch
tow away zone
tow zone
toxic
toxic waste
turn off cellular phones
turn signal
uneven shoulder
use only as directed
ventilation required
video camera in use
video monitor in use
watch for falling rocks
watch for trucks
wear protective eye gear
wear safety glasses
weight limit
wide load
wrong way
X-ray
yield

3. *Affixes:* The collective term for prefixes and suffixes.
4. *Base words:* Words that can stand alone as English words. For example, in the word *ungovernable*, *govern* is a base word because it can stand as a word by itself. *Un-* ("not") is the prefix, and *-able* ("capable of") is the adjective-forming suffix.
5. *Roots:* Word parts, often of Greek or Latin origin, that combine with affixes to form words. A root *cannot* stand alone as a word (e.g., the *-spect* in *retrospect* is a Latin root that means "look"). *-Spect-* is not a word in English, but when combined with the prefix *retro-*, it creates a word. In contrast to many programs, we prefer the term *root* to the more commonly used *root word*, because, as one of our students asked us, "Why do they call it a root word when it's not even an actual word?" Remind your students that Latin and Greek roots, like *-spect*, need to be attached to other word parts to "live" as stand-alone words in English—just as plant roots need to be attached to other plant parts, like stems and leaves, to stay alive.

Morphological analysis is the act of breaking down words into these various units of meaning (e.g., prefixes, suffixes, roots). Children are required to use morphological analysis from an early age, as when they differentiate singular from plural forms or past and present tenses of verbs. As the material they read becomes more complex, a greater array of affixes confronts them. The ability to take apart an unfamiliar word in order to determine its meaning is of increasing importance.

Just how powerful is this morphological system? Is it worth teaching? Consider this: 90% or more of upper-level English vocabulary words are of Latin or Greek origin (Green, 2008). When we teach just one powerful root (e.g., the Greek root *-arch/-archy*, meaning "rule" or "chief"), we are giving our students the key to unlock scores of related word meanings (e.g., *monarch/monarchy, anarchy, patriarch, matriarch, oligarchy, archetype, hierarchy, archbishop, archangel, architect*), all sharing the core meaning of "rule" or "chief." With morphology, a little goes a long way. When we teach affix and root knowledge like this, we are not just giving our students fish so they can eat for a day; we are teaching them how to fish for words for the rest of their lives. This is an incredibly powerful and efficient way to boost vocabulary knowledge.

Assessing Affix and Root Knowledge

However, assessing a child's proficiency in the area of affix/root knowledge can be problematic. One way would be to show the child a sentence containing a word that is subject to structural analysis (i.e., a word that can be structurally analyzed). This approach allows the teacher to see if the student can apply his or her affix and root knowledge in context. For example, let's say the child is shown this sentence:

The hot sun made the man uncomfortable.

The teacher asks the child what the word *uncomfortable* means, or perhaps how the man felt. If the child responds by saying that the man felt bad, or words to that effect, would

the teacher be justified in assuming that the child has used structural analysis? Perhaps, but the word *uncomfortable* is so common that it might well already be a sight word for that particular child.

Another approach to assessment is simply to ask the meanings of common prefixes and suffixes, such as those shown in the following charts. That is, if the child understands that the prefix *un-* means "not," then this knowledge can be tested the way we might test other vocabulary knowledge. For example, a teacher could simply inventory a child's ability to supply the meanings of familiar affixes. The problem with this approach, however, is that it in no way guarantees that the child can apply this knowledge of affixes to the words encountered in real reading and writing.

Assessing Application and Depth of Affix and Root Knowledge: Generating Related Words Task

To solve this problem of assessing affix/root knowledge in isolation, you can add a simple task called Generating Related Words to the affix/root assessment described above, to assess whether students can actually apply their affix or root knowledge to English words (as opposed to simply knowing that the prefix *sub-* means "below," but not being able to apply it to related words like *submarine* or *subatomic*). Following is a sample assessment task you can use to assess a learner's affix or root knowledge (Templeton et al., 2015). For each affix or root, the student is presented with the target word part (which is not defined) and an example word that contains that target word part (e.g., *re-*, *return*). For each affix/root, ask the student to (1) think of and write four (or more) related words with the same prefix or root as the example word, and (2) then write the meaning of the prefix or root.

Prefixes and Roots

re- (example: *return*) redo, reuse, replay, rerun
re- means: again

inter- (example: *international*) intermission, interact, intercontinental railroad
inter- means: between

-tract- (example: *distract*) retract, traction, tractor, contract
-tract- means: pull

While this assessment may be somewhat challenging for students, it is one of our favorite ways to assess morphological knowledge with older students, for a number of reasons. First, we can quickly and efficiently gauge the depth of learners' knowledge of a target morpheme by the quantity and sophistication of the related words they can generate. Second, we can administer this assessment quickly and efficiently in a whole-group setting. Third, this task taps learners' ability to apply their affix/root knowledge in writing. Finally, we've found that students are often better able to determine an affix or root's meaning after generating the related words. We can also dig deeper later by asking students to define the actual words they've generated. Periodically assess these same

affixes and roots as a postintervention assessment to measure growth in morphological knowledge.

The three lists below include (1) high-utility prefixes and their meanings, (2) high-utility suffixes and their meanings, and (3) high-utility Latin and Greek roots and their meanings. You can assess and teach these in the upper elementary grades and beyond. Use the Generating Related Words task described above for these affixes/roots. Those the child cannot define and/or generate related words for can be taught, and the list becomes an informal diagnostic assessment.

We strongly recommend posting these affixes/roots and their meanings in your classroom as you teach them, and providing individual affix/root reference sheets your students can refer to while reading, writing, and learning across the content areas. You and your students will be amazed at how often these roots come up across the day in math, science, social studies, and ELA. It is one of the best ways we know to make connections across the content areas, as these meaning parts are already naturally embedded in the vocabulary of your curriculum.

Common Prefixes and Their Meanings

un-	not	ir-	not	ex-	out
in-	not	il-	not	ante-	before
im-	not	a-	not	anti-	against
sub-	below	kilo-	1,000	de-	away
super-	above	mega-	large	dis-	apart from
mono-	one	micro-	small	dis-	opposite
uni-	one	multi-	many	extra-	beyond
bi-	two	over-	above	fore-	in front of
di-	two	poly-	many	mal-	bad
tri-	three	prim-	first	magni-	large
quad-	four	proto-	first	medi-	middle
tetra-	four	sol-	along	mid-	middle
quint-	five	tele-	far	mis-	wrong
penta-	five	under-	below	neo-	new
hexa-	six	ab-	away from	omni-	all
septa-	seven	ad-	to	post-	after
oct-	eight	auto-	self	pre-	before
deca-	ten	bene-	good	pro-	forward
cent-	hundred	circ-	around	re-	again
ambi-	both	con-	with	trans-	across
semi-	half	com-	with	ultra-	beyond
hyper-	over	con-	against		

Common Suffixes and Their Meanings

-less	without	-ness	state of	-ment	state
-er	more	-ous	like	-itis	disease

-est	most	-ish	like	-phobe	one who fears
-ette	small	-logy	study of	-ism/-ist	belief/one who believes in
-trix	woman	-ly	like		

Suffixes can be difficult to define. We recommend that suffixes be presented in words, rather than in isolation.

Common Greek and Latin Roots and Their Meanings

micro, min	small	macro	large	aud	hear
scope	watch	spec/spic	see	gram/graph	write
scrib/script	write	voc	call	fract, rupt	break
struct	build	bio	life	geo	earth
therm	heat	photo	light	port	carry
tract	pull	hydra/hydro	water	aster/astr	star
dem	people	jur, leg	law	spir	breathe
fid	faith	soph	wisdom	polis	city, state, citizen

SPELLING

Since the pioneering work of Edmund Henderson (1981), Charles Read (1971), and Carol Chomsky (1979), educators have known that the invented spelling of young children follows a clear developmental pattern. As children learn about written words, their attempts at spelling reflect this growing sophistication of their knowledge of orthographic patterns. We follow the stages outlined by Henderson as we examine this growth. Different authors may use different names to describe the developmental stages. We apply the stage names used by Bear and colleagues (2020).

Emergent Spelling

Children's initial attempts at writing are generally nonalphabetic; sometimes these first attempts are pictures but are called "writing" by the children. Later attempts are scribbles that, although illegible to observers, can be "read" by the young writers. Harste, Burke, and Woodward (1982), working with children of different cultures in a university day care center, found that their scribbles reflected the print to which they were exposed. Thus children from Arab families produced scribbles that resembled Arabic, children from Chinese families made scribbles that resembled Chinese characters, and so on. This correspondence suggests that scribbles represent an early understanding of the form of print.

When children learn letters, they incorporate those letters into their spelling. At first, these letter strings have nothing to do with the sounds in the word itself. So *bear* might be represented by MSDF.[1] We have to learn to view early writing as a demonstra-

[1] We use all caps to note invented spelling, regardless of how a "word" was written.

tion of what children do know rather than what they don't. The use of letters, rather than scribbles, suggests that the children (1) know the convention that words must be made up of letters, and (2) know at least some letters. At this stage, children often begin to write words logographically. That means that they may be spelling a learned word as a unit, such as their names, MOM, or STOP.

As children continue to learn letters and develop some phonemic awareness, their spellings begin to reflect their emergent analysis of words. Children's spellings may consist only of a letter representing an initial or final sound, such as *J* for *jam* or *S* for *sun*. Sometimes a child at this stage may put down a letter representing a single sound and then add others, such as the girl we worked with who first put down an *f* for *fish* and then added additional letters—FZTHSLT—saying that "*f*-words were always long." Children who can represent a sound in a word with a letter are developing rudimentary phonemic awareness. Our research shows that such children nearly always use initial sounds to identify written words (Stahl & McKenna, 2001). Spelling development closely follows the development of word recognition but lags a little behind, because spelling is a production task, and production tasks are more difficult than recognition tasks. This level, however, seems necessary for children to make sense of the alphabetic system.

As children continue to analyze words in terms of phonological awareness as well as written word recognition, their spellings become increasingly complex. First they add final consonants, so that *bear* becomes BR or *hen* becomes HN. Often their spellings reflect the way they analyze the words as they are saying them. So blends such as *dr*, as in *dragon*, may be represented by JR, because that is how the child may hear it. Other blends may be represented by single consonants.

Letter Name–Alphabetic Spelling

Learning about vowels is the next large conceptual leap for children. Emergent spellings do not include vowels. The inclusion of vowel markers, whether correct or incorrect, represents a child's beginning knowledge of the alphabetic principle. Spoken words fold consonants around the vowel, so that they are copronounced; a consonant is pronounced slightly differently with each vowel. Children can be aware of consonants through sensitivity to articulatory gestures (Byrne, 1998); still, consonants are difficult to isolate within words (Shankweiler & Liberman, 1972).

Children generally begin to include vowels in their spellings by about first grade. Whether this inclusion is due to instruction or experience with language is not clear, but the shift is an important one for children learning to read and spell. At this point, *bear* may be represented as BAR, with the child using the letter name "AY" to represent the long-vowel /A/ sound; similarly, *hen* may be spelled HAN.[2] As the name of this stage indicates, children at this stage use the letter name strategy when spelling words. This

[2]The substitution of *a* for short *e* may be due to a letter name. The sound of long *a* is really a diphthong of /ey/. When children want the short-*e* sound, they find it in the sound of the letter name "a," which actually begins with a short-*e* sound! Although this hypothesis seems to be a stretch, the substitution of short *a* for short *e*, and *i* for short *a* (/ay/), is common enough that it seems a plausible explanation. Another explanation is that short *e* and long *a* both "feel" similar because they are both *front* vowels (i.e., both sounds are made in similar places of articulation in the vocal tract).

means that they use the *names* of the letters as clues to the *sounds* these letters represent. This works for many letters (e.g., the use of "bee" for the letter *B* and the long vowels such as "ee" for the letter *E* makes sense), but not for a number of other letters (e.g., the letter name "WIE" for *Y* actually makes the /w/ sound; the short vowel "eh," like all the short vowels, has no correlating letter name in the alphabet).

At the earlier points of this stage, children may use the letter name to represent a syllable—GRL and LETR are common—but most typical is the emergence of vowels. Consistently representing vowels in words indicates that the child understands the alphabetic principle: namely, that letters represent the sounds that make up spoken words.

Within Word Pattern Spelling

The letter name spelling stage is fueled by acquisition of the alphabetic principle. The within word pattern stage involves the learning of high-frequency spelling patterns—or sequences of letters—that occur in written words (e.g., "ai" in *r<u>ai</u>n*, "ay" in *d<u>ay</u>*). At this point, children (1) consistently spell words with short vowels correctly; (2) begin to show sensitivity to patterns in words; (3) make distinctions between long and short vowels; and (4) use long-vowel markers, although not always correctly. Thus *bake* might be BAIK but not BAK; *like* is spelled LIKE or LEIK not LIK. In addition, children use *-ed* and *-ing* endings. This stage, which is usually achieved by the end of second or early third grade, is characterized by mastery of basic sound–symbol spelling conventions and a growing knowledge about the large variety of spelling patterns that represent single sounds. Due to the different representations of the same sound, instruction must incorporate distributed practice over time that allows students to practice spelling and reading a collection of words beyond the small list of words that were taught.

Further growth in spelling moves from the purely sound–symbol and pattern levels to the morphological level as children master the basic orthographic patterns and display an emerging awareness of spelling–meaning relationships.

Syllables and Affixes Spelling

The next stage might also be called the *syllable juncture stage*, because it represents children's knowledge of how syllables fit together. The most obvious marker is the consonant-doubling rule; children during this stage develop consistency in spelling words that end with *-ing* or *-ed*, and in knowing when the consonants have to be doubled and when they do not (e.g., *bat–batted* vs. *bait–baited*). Children learn other conventions at this stage, such as the use of *-y* or *-le* at the end of words, but they may not consistently apply them. This stage signals that children are ready to work with strategies for approaching multisyllabic words.

This stage represents children's initial use of morphological knowledge to spell words. During this time period, children master *bound morphemes*, or morphemes that do not stand alone as words (affixes and roots). The morphemes mastered also tend to function as syntactic markers, such as tense or number (e.g., the plural formed by adding *-s* or *-es*). Children can usually be observed in this stage between grades 3 and 8.

Derivational Relations Spelling

At the stage of derivational constancy or derivational relations, children learn to use spelling to recognize and represent semantic relationships between words, even words that are pronounced differently. Thus children may use knowledge that words are derived from a common root to spell them conventionally. For example, children may use the relationships between words like *fantasy* and *fantastic* and *fantasize*, or *inspire* and *inspiration*, to help spell them conventionally. This stage may continue through adulthood as the derivational relationships between words provide a means of connecting spelling and meaning.

Spelling Inventories

There are multiple spelling assessments available to determine and analyze a student's spelling stage. Among the most popular are those by Ganske (2014) and Bear and colleagues (2020). We have included the Developmental Spelling Analysis (DSA) Screening Inventory from *Word Journeys, Second Edition* (Ganske, 2014) in Form 5.6 (p. 154). The purpose of the DSA Screening Inventory is to identify a student's spelling stage. It is designed to be followed by one of the 25-item stage feature inventory lists for a precise analysis of a student's performance on specific word features within a particular stage. As the student progresses, different forms of the feature inventories are used to trace developmental growth. In *Words Their Way* (Bear et al., 2020), each of three inventories (primary, elementary, upper-level) has an accompanying feature guide to identify spelling patterns that require instruction.

This discussion is only preliminary; the interested reader is referred to the books by Ganske (2014) and Bear and colleagues (2020) for more in-depth assessments, discussions of how spelling analysis can be used for planning instructional programs, and developmentally appropriate teaching activities.

TEACHING WORD RECOGNITION AND SPELLING

Entire books have been written about techniques for teaching children to recognize words (e.g., Bear et al., 2020; Cunningham, 2012; Ganske, 2014; Hayes & Flanagan, 2014; O'Connor, 2014). In this section, we highlight a few techniques that we use often in the clinic.

The first rule of clinical practice in working with a struggling reader is to "find out what has been done before, and don't do it." This is truer in the area of word recognition than in any other area. A first-grade child with whom Kay worked as a teacher had come from another school and read at a preprimer level. He had worked very diligently and had reached a point where he was ready to use a particular phonics workbook for additional practice. At his then-current stage of development, this would have been an easy review, for he had already mastered the material. However, because he had used that particular book in his previous school and had failed miserably with it, he recoiled and would not touch it. Perhaps this is an extreme example, but the principle holds: Do

not use an approach that has failed in the past, whether or not it is appropriate, because it will not work now.

Numerous different approaches to teaching word recognition are currently available. Stahl, Duffy-Hester, and Stahl (1998) divide phonics instruction into traditional, constructivist, and spelling-based approaches. Hence we briefly review synthetic phonics (a traditional approach); compare–contrast (a constructivist approach); and making words (Cunningham & Cunningham, 1992) and word sorts (Bear et al., 2020) (spelling-based approaches). We begin with a description of word banks, a tried-but-true method of building sight vocabulary based on the principle of distributed review.

Word Banks

Words missed on a high-frequency word inventory, causing trouble during oral reading, or partially known but not yet solidly stored in memory can be used to develop a word bank or as an informational source for planning additional instruction. Words can be written on 3" × 5" index cards and used for practice in a game called Three Strikes and You're Out. Words correctly identified by a child on three different occasions are retired from the word bank; a growing number of "retired" words can be highly motivating. Children can practice words from each other's word banks during individual reading time.

Synthetic Phonics

Synthetic phonics instruction starts with teaching letter sounds and then supporting students as they blend these sounds to form words. The word *synthetic* refers to the fact that students build, or synthesize, words by blending the phonemes. The student begins by sounding out words, first in lists and then in texts (often decodable texts). The hallmark of synthetic phonics is that children are taught to *blend* sounds together to make words. An example:

1. If the letter *e*, representing the short sound of *e*, is to be taught, the teacher presents the letter *e* on the blackboard or on a note card. The teacher may say, "This is the letter *e*. It says /e/."

2. Next, the teacher writes the word *pet* on the board or presents three note cards with the letters *p*, *e*, and *t* on them. (The use of note cards allows a physical demonstration blending.) The teacher demonstrates the blending of the letters to make the word *pet* by running his or her finger under the letters (if the blackboard is used) or pushing the cards together.

3. Students practice blending the word *pet* as a group.

4. The teacher then writes or shows a list of words, such as these:

pen	bet	deck	mesh	then	peck	let
send	less	yet	fed	bent	shed	tell

The students blend the words together, at first as a group and then individually.

5. Next, the students read a decodable text that contains words with the short sound of *e*.

6. We find that an especially effective follow-up, either later in the lesson or immediately following the reading of the decodable text, is to have children write short-*e* words from dictation.

7. Following this lesson, the teacher may further follow up on the short sound of *e* by using a compare–contrast approach, having each student practice on short-*e* words with a partner, or having students use a computer program that provides practice on short-*e* words.

Synthetic phonics is used in a number of commercial programs, but the basic lesson can be done quite easily. The steps described above should be done at a brisk pace to ensure engagement. This foundational approach can be used to introduce patterns that a child has missed on the Informal Phonics Inventory or on one of the other measures presented in this chapter.

Compare–Contrast Approaches to Phonics

In the compare–contrast approach, children are taught to compare new words to already known words. This method is used at the Benchmark School in Media, Pennsylvania (Gaskins et al., 1988; Gaskins, Ehri, Cress, O'Hara, & Donnelly, 1996). In synthetic phonics, teachers help children learn to sound out words; in the compare–contrast system, teachers help children learn how to use analogies to decode unknown words. Since adult learners use both types of knowledge, these approaches, in our view, are not mutually exclusive. Instead, we feel that once children have acquired some sound–symbol knowledge, possibly through synthetic phonics instruction, they should learn to compare new words to already known words. Compare–contrast approaches are also particularly useful for teaching students to decode polysyllabic words.

The basic compare–contrast lesson consists of a dialogue aimed at helping children internalize the process of identifying words by (1) identifying known words (clue words) that resemble an unknown word, (2) seeing what is similar between the two, (3) using what is similar to make a tentative identification of the word, and (4) checking to make sure that the identified word makes sense in context. A simple version of a compare–contrast lesson follows:

1. Give students six index cards. Have them print the following six words on the cards so that you can see them. These words become the students' key words, and students must be able to recognize them automatically.

black hold kind play rain run

Now display words from the following group. Have each child find the word that looks most like the presented word. At a signal from you, have all the students display their "look-alike" word. Students should respond to questions such as "Where are the two words alike? Where are they different?" Ask a volunteer to pronounce both words.

mind	crack	blind	hind	fold	lack	runt
pain	smack	hay	main	blast	slack	stack
gold	rind	bind	mold	tack	bay	bun
gain	gray	plain	raid	pray		

2. On the following day (or when you feel the students are ready), add three words to their key word list: *man, less, her.* Match these nine words to the following group.

clay	per	ban	lent	fan	bless	pan
led		press	sun	sold	sack	stain

You can make up other words (with or without students' help) to add to any of these matching lists.

The compare–contrast approach can be used with the phonograms in the Z-Test, described earlier in this chapter. For words that are not known, a key word can be taught, using the same procedures as above. Additionally, multisyllabic words that contain one or more of the key rimes can be introduced by using the procedures suggested in Step 1. These difficult words may be drawn from wide-ranging reading contexts. Whether or not you use the technique with words in context, you should make a significant effort to help students see the relationship between what they do during the exercises and how they can use the new skills during their independent reading.

Making Words

Making words is a spelling-based decoding activity. In this activity, children learn to think about letters in words by manipulating letters in a spelling task. An example:

1. The teacher might take 1-inch-square index cards containing the following letters:

   a i o d n s r u

2. The teacher announces, "I want you to make a two-letter word [signals with two fingers]—*an*." As children move letters to make the word, the teacher checks their efforts and offers praise.

3. After all children have spelled the word, the teacher displays the word on a word card and puts it in a pocket chart.

4. The teacher proceeds through other two-letter words (e.g., *do, is, in*), three-letter words (e.g., *run, sad, rid, nod*), four-letter words (e.g., *said, rods, rind*), five-letter words (e.g., *sound, round*), and up to an eight-letter word (e.g., *dinosaur*).

Patricia Cunningham and her colleagues have written several books with lesson plans for making words (short words, appropriate for students through second grade; e.g., Cunningham & Hall, 2008) and making big words (appropriate for students in third to sixth grade; e.g., Cunningham & Hall, 2001).

Word Sorts

Word sorts are another spelling-based approach to teaching children how to decode. With this method, children are given lists of words and asked to sort them. In *closed* sorts, children are given categories; in *open* sorts, children are asked to come up with their own categories. Open sorts can be difficult for children who have reading problems or who have minimal experience working with particular patterns; however, the extra challenge of figuring out the patterns and categories is often extremely motivating. We recommend beginning with closed sorts, introducing open sorts only after children have had ample practice with the easier task or as a review of several previously taught patterns. When introducing open sorts, the teacher needs to provide needed modeling to the group.

A list of words like the following word group might be used for children who are learning to contrast *sh* and *st,* first in the initial and then in the final position:

stand	shop	step	shut	stamp
shall	shed	stub	ship	stun
rest	trash	last	mush	list
fist	fast	fish	just	rash
past	mist			

In a closed sort, these words might be sorted as words with *sh-,* as in *she,* and words with *st-,* as in *stop.* Or they might be sorted as having *st* and *sh* at the beginning or at the end.

SMART Boards provide a touch-and-drag digital option for sorting, though the low-tech pocket chart is still an effective mainstay in many classrooms. Bear and colleagues (2020) and Ganske (2014) provide many suggestions for word-sorting activities that are tied to children's spelling and decoding knowledge.

WORD-STUDY INSTRUCTION: PUTTING IT ALL TOGETHER

We believe that deep-rooted, robust word knowledge best develops when we provide learners a variety of ways to work with words. Using just one approach or method often won't work, particularly with struggling readers. We want readers and writers to be able to (1) break whole words into word parts (analytic phonics), (2) put word parts together to build words (synthetic phonics), (3) compare new words to known words (analogies), (4) and apply their word knowledge in context. With this in mind, Hayes and Flanigan (2014) recommend choosing activities across a week that provide your students opportunities to learn about words in four different ways:

1. Read words (e.g., word sorts, word banks, compare–contrast methods).
2. Write/spell words (writing sorts; generating as many words as possible that follow a pattern).

3. Manipulate words/word parts (making words, synthetic phonics).
4. Transfer word knowledge to reading/writing (word hunts—hunting for target word patterns in familiar books, writing dictated sentences with target words).

WORD STUDY OVER TIME

The foundation for word recognition begins in the preschool years and it plays an important role in teaching children to read in the primary grades. However, we are doing students a disservice if a systematic, explicit approach to word study stops at third grade. In the intermediate grades, students will benefit from continuing to increase automaticity with the top 1,000 Fry high-frequency words that can be obtained online. This is particularly true for older students in special education, who may have phonological processing and/or word recognition problems. Additionally, a systematic approach to the complexities of multisyllabic words and morphological analysis is key within a school. A systematic, schoolwide approach ensures that students are receiving deliberate, comprehensive instruction in high-utility affixes and roots, which will also support their vocabulary growth. Finally, all instruction of early or complex word recognition skills should be developmentally driven, engaging, and cognitively active.