Reverse Direction
Decoding

REVOLUTIONIZING HOW WE TEACH READING
by Kenneth Wesson

A short list of humankind’s greatest achievements would undoubtedly include the use of tools, language and technology. Reading and writing have become so second nature to educated individuals that reading is taken for granted; but by readers only. Literacy can not only alter the success-trajectory of our lives, but the process of learning how to read literally alters brain circuitry, the physiology and architecture of the human brain. In addition to reading words, we read words, use words in speech, and even think in words.

Phonics is the popular reading strategy commonly taught in preschool, primary and upper elementary grades, and sometimes still in middle schools. However, shouldn’t any technique used repeatedly for almost 10 consecutive years with only modest success warrant some suspicion? Worst of all, the word “phonics” does not conform to its own rules. The mere fact that the term “phonics” itself is not spelled phonetically should raise our suspicions about the theory! It has produced millions of “phonics-damaged” children according to some researchers.

Whether you are a teacher, an parent or a student, a learner’s ability to transfer a new vocabulary word into sight-word vocabulary as quickly as possible is critical to academic success. Struggling students benefit when they can focus their attention on test comprehension rather than diverting their attention to the laborious process of decoding each unfamiliar word and pronouncing each syllable. Cognitive science is shedding light on how reading is orchestrated inside the brain and how we can improve reading comprehension.

CONTEMPORARY READING CHALLENGES

Most of us have an image of reading-instruction transpiring effortlessly in a classroom. The prevailing reality, however, paints a different picture of young children performing at less-than-stellar reading levels, because written forms of English are not as easily learned. We deploy a fairly consistent and reliable phonetic formula to produce over 600,000 words, each crafted from just 44 phonemic sounds cobbled together by combinations of only 26 letters—a stark contrast to Chinese and other more complex languages.

When conjugated, pronounced or made plural, nearly 13 percent of English words undergo irregularities or exceptions to the rules which must be memorized in order to speak and read English correctly. In Spanish, Italian and Portuguese, we see far fewer exceptions. Even early learning, to read Chinese, Portuguese, English or Spanish calls on different neural anatomy, different brain activity, and the formation of different neural networks that link print and sound together.

During the seventh month in utero, a fetus hears sounds for the first time, although language-learning begins in the postnatal period; for the most part. Newborn brains do not come preloaded with a Choose Language user waiting to be selected as the click of a mouse. Instead, the developing brain can learn any of the world’s 6,000 languages depending on which language it engages with—not merely exposed to—following birth. Language-sounds critical to mastering the local tongue take this route in order to become permanent residents of the Persianian brain in the merely listening to voices on videos, Baby Einstein and an iPad app will make only modest contributions to language development.

Before children can become efficient readers, they must first have sufficient experiences in understanding and using spoken language. Oral language serves as the foundation on which reading and writing are built, proficiency in reading and writing. Reading competency begins with the understanding and using spoken language. Reading has been a major part of the human experience for hundreds of years, and we have amassed a large body of research on the process of reading. So why are contemporary students by the millions having such difficulties with it?

What repeatedly appears to lead to a deficiency in reading comprehension is an over- extended fixation on phonics. Poor readers often focus their attention disproportionately on the decoding process, leaving fewer cognitive resources available for connecting ideas from one sentence to the next, linking current and previous paragraphs together, and determining meaning for overall comprehension. Typically, reading is taught one-on-one, in ability-level groups or with the “whole-class” approach. In each setting, students spend hours decoding new and old words. Key vocabulary words are written on the blackboard and carefully dissected into syllables. Some words are re-spelled phonetically to assist with their pronunciation. Familiar words with rhyming sounds are reintroduced and connected to the new vocabulary words, to aid pronunciation. Major reading comprehension problems go undetected at this point.

Outing a word when it is encountered for the first time is important for moving that word into one’s sight vocabulary. Outing it every time it appears in text detracts from understanding contextual information. When these students come face-to-face with a brand new word they are expected to turn off their automatic pronunciators to pronounce each discrete syllable of the unfamiliar word (as they were trained to do) and momentarily abandon their reading comprehension efforts.

Most teachers notice students who read slowly because they stop to decode each unfamiliar multisyllabic word, causing them to lose their concentration. These students often lose track of the passage’s main ideas while perusing the bottom of the page and ask themselves, “What did I just read?” At this juncture, reading comprehension has clearly become a learning casualty.

A 2013 federal study looking at the effectiveness of four widely used reading programs found that three of the four programs had no measurable positive effect on reading achievement. The fourth program was shown to have a negative impact on achievement scores. There was no reading progression or an iPad app will make only modest contributions to language development.

IS THERE A SOLUTION TO OUR READING PROBLEMS?

From elementary school to the university level, teachers are alarmed at the numbers of students struggling daily with new vocabulary words, discipline-specific terminology and previous taught words appearing in a new academic context. Reading has been a major part of the human experience for hundreds of years, and we have amassed a large body of research on the process of reading. So why are contemporary students by the millions having such difficulties with it? The answer is threefold:

1. Reading the words one syllable at a time.
2. Reading the words one syllable at a time.
3. Reading the words one syllable at a time.

When facing a word that should be a long-time resident in our students’ collective word banks, when they must first have sufficient experiences in understanding and using spoken language. Reading has been a major part of the human experience for hundreds of years, and we have amassed a large body of research on the process of reading. So why are contemporary students by the millions having such difficulties with it? The answer is threefold:

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Examples: function/func/

Examples: first, last, letter is in the correct place.

Pros: what needs to be recognized and memorized is the order of the sounds. Cons: it is easier for us to repeat sounds from work learned.

The Dolch Word List, compiled in 1948 by Dr. William Dolch, is composed of "220 "sight words" (high-frequency, high-utility sight words) that competent readers respond to by sight (not phonics) paving the way to reading fluency. In a 2009 study at the University of Leicester, researchers found that early word-recognition skills were indispensable to lifelong reading success. Adults who learned to recognize words as young readers were able to recognize more words and read them faster than words they learned later in life. Background knowledge is important in learning new concepts, and building background knowledge includes all related vocabulary.

As students advance through the grade levels, the number of difficult terms from a variety of specialized fields and subject areas that they will need to know will continue to accelerate annually. These words typically will be composed of three or more syllables. According to researchers William Nagy and Richard Anderson, the average student is confronted annually with over 10,000 new words, beginning in fifth grade. Those printed words seen for the first time are frequently multisyllabic and critical for understanding content.

Competent reading is vital to success in high school, college, graduate school and our adult careers. Contemporary projections indicate that today's college graduates entering the workforce will take on five to eight different careers during their lifetimes. The 21st-century professional will need every advantage at his or her disposal.

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THE PERISYLVEAN CORTEX

Attacking each arbitrary syllable in sequential order is difficult, by hearing the word sound via auditory cortex, one can repeat what was heard within the past three to 10 seconds with ease. The perisylvian area of the brain is composed of the cortical real estate surrounding the sylvian fissure in the left hemisphere (per- = means “pertaining.” Syl- = refers to its location, which is near the sylvian fissure). Cognitively, these are among the primary centers in the brain that facilitate oral and written communication.

To participate fully in the wide range of human language experiences, all areas of the perisylvian area must be fully developed. This region of the brain includes the phonological loop, which helps us hold and mentally rehearse verbal information.

There are two major components to the phonological loop. First is a phonological storage system, which is critical to our capacity for maintaining recent auditory information. For familiar speech-based language-sounds, it operates only for brief periods of time—approximately two seconds. After several seconds, those sounds quickly fall victim to forgetting (memory decay), unless they are immediately rehearsed or repeated (practiced). Delaying or preventing rehearsal results in word-sounds that are quickly discarded.

Second, the phonological loop recruits the hippocampus to assist with working memory. The hippocampus is a special area of the brain that is involved in the formation of new memories.

Glossed readers automatically process words at lightning speed, while their less-skilled peers continue to struggle with decoding. Researcher Charles Perfetti has found the ability to decode word-long words regardless of general impacts qualitatively different between good and poor readers.

Our pattern-seeking brains naturally look for well-known and recognizable patterns first, rather than unlearning phonics strategies when we see a new word in a sentence. Being well-versed in phonics would be an impediment to careful reading this passage, and clearly of little or no help in deciphering the words.

Perisylvian cortex

THE SIX SYLLABLE PATTERNS FOR READING ENGLISH

There are six syllable patterns in English for basic syllable decoding and recognition. While it is not necessarily important that a teacher memorize the names of each pattern, they should be taught to recognize each pattern when they encounter it. While it is not necessarily important that students memorize the names of each word into its constituent syllables. Fortunately, useless as resources when it comes to helping to pronounce words correctly.

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1. CLOSED VOWEL PATTERN: Examples: odd, odd, memory, memory

The vowel makes a short sound, if closed in by two consonants in the syllable.

2. OPEN: Examples: di-gest, cer-e-brum, biol-o-gy, co-ma, pho-bia. The vowel typically makes its long sound, when the syllable ends with a vowel.

3. VOWEL-CONSONANT-FINAL “E” PATTERN: Examples: spine, Iobe, den-drite, stroke, gene

The vowel sounds change and is typically a short sound, when it contains a vowel plus an “e”.

4. VOWEL PAIR COMBINATIONS: Examples: head, learn, heart, breath

When vowel pairs or “vowel teams” appear together, they usually make a short vowel sound.

5. VOWEL “-IH” PATTERN: Examples: con-tec, heart, sur-geon

The first sound marks a long sound, when the syllable has a vowel immediately followed by a consonant and ending with a final “e”.

6. FINAL SYLLABLE “-ION”, “-LE”, “-SURE”, “-MENT”, “-ANT”, “-ENT”, “-ANCE”:

The pronunciations and spelling for these syllables found at the end of a word are stable and consistent across the language.

memory trace for recently processed speech-sounds. Memorizing sight-words is possible for the first thousand words or so; thereafter, new words require the RD2 strategy if they are to be effectively learned.

WHY RD2 WORKS

The RD2 system works reliably with any new word with two or more syllables, because it is easier for us to repeat sounds from work learned.

The first step in the RD2 process is breaking a word into its constituent syllables. Fortunately, there are only six major categories of syllabic patterns governing the English language (see chart, The Six Syllable Patterns for Learning English). Here are the steps to Reverse Direction Decoding:

1. Pre-read a paragraph, a small section of a book or a chapter.

2. Identify all unfamiliar words and difficult multisyllabic words.

3. Write them in a list in one column.

4. Use the chart to divide those words into their constituent parts in another column.

5. Place your left thumb or a small rectangular piece of paper over all but the very last syllable of the word.

6. Pronounce the last syllable.

7. Now, uncover the last two syllables and pronounce them in their proper order, beginning with the second-to-last syllable.

8. Reveal only one additional syllable at a time, moving from left to right away from the very last syllable. Pronounce the last three syllables in their proper order; then pronounce the last four syllables in order, etc., until all syllables have been uncovered and read in order.

9. Read the complete word three or four times, until it no longer needs to be read completely in order to pronounce it entirely.

10. The word should be recognizable and should have moved into your “sight vocabulary.” Practice your personal RD2 word list regularly.

Here is an example of applying RD2: “De- vidualistic” can be divided into the following syllables and patterns, which can be pronounced in the following order:

-tis

-li-tis

-ul-tis

-i-eu-lis-tis

-ver-ti-eu-lis-tis

di-ver-ti-eu-lis-tis

Upon hearing any new sound or syllable, it is remarkable how quickly or instantly one can recognize that sound than it is to predict the syllable that might come next. The auditory cortex renders the human brain highly capable of initiating a new sound without attending to or just heard in a word, but the brain cannot accurately anticipate the next syllable in an unfamiliar word. Each new sound gets integrated with the sound that has just been heard, and each syllable “primes” the last-sounded syllable(s) directly followed by the new syllable.

The vowel typically makes its long sound, when the syllable ends with a vowel.

The vowel makes a short sound, if closed in by two consonants in the syllable.

The vowel sound changes and is typically a short sound, when it contains a vowel plus an “e”.

The pronunciation and spelling for these syllables found at the end of a word are stable and consistent across the language.

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We hope that RD2 will revolutionize how we teach reading in English-speaking classrooms around the world. It can be an academic life-saver for both struggling children and adults.

Regardless of the professional role each of you plays in educating our young, the long-range reading goal for all of our children is that they can read, understand and enjoy the printed word. In her book Beginning to Read: Thinking and Learning About Print, Dr. Marilyn Adams states, “The automaticity with which skilled readers recognize words is the key to the whole system. The reader’s attention can be focused on the meaning and message of a text only to the extent that it’s free from fusing with the words and letters.” Reverse Direction Decoding will help students get back on the right track, where they can focus on reading for the meaning or pleasure and do so with ease and success.

Kenneth Wixon is a former faculty member and administrator in higher education. He works with educators and administrators throughout the United States and overseas. He delivers keynote addresses to educational organizations and institutions on the neuroscience of learning.