Identifying the Source of Reading Difficulties
Chapter One

I.   What It Means to "Read"
II. A Snapshot of the Challenges and Root Causes
III. Determining a Text's Difficulty

Introduction

Imagine needing to teach the content of a book, novel, or other text that your students have difficulty reading on their own. Can you imagine the challenge entailed?

Now, imagine that you are not imagining things.

Few new secondary teachers avoid the shock that comes from realizing that their textbooks or supplementary readings are out of reach of their students' literacy skills. Understandably, textbooks mandated by the state or districts usually are designed for students who have on-grade-level reading skills. Unfortunately, as noted in the introduction to this text, many of your students' literacy skills will not be sufficient to access the information in those texts. As you remember from your own years in junior high and high school, much of your learning about a particular subject matter was learned through reading: reading the textbook either in class or for homework, reading novels and short stories, reading supplementary articles. If students are unable to read and comprehend the key materials of a content area course, their ability to learn the skills and concepts of that subject is severely hampered. In what makes depressingly perfect sense, corps members in secondary placements cite their students' below-grade-level reading skills as one of the biggest challenges to achieving significant gains with their students.

When teachers begin to work with students with such low skills, many are tempted to throw up their hands and sigh, "these kids just can't read…how am I supposed to teach them social studies/science/world literature when they can't read the material?" While the statement may be true—many students even at the secondary level "can't read"—the phrase could point to a wide variety of different reading-related problems. Reading has several distinct layers that must be pulled apart in order to fully understand (1) what it means to read and (2) the different levels of support we might need to provide for students who are struggling with reading. In this chapter, we'll unpack what it means to read by looking at several classroom scenarios with students who "can't read" for a variety of reasons. With each illustrative scenario, we'll discuss the foundational reading skill (or skills) that the student lacks. Then, because accurate diagnosis of a student's reading challenges is critical to appropriate instruction and growth in reading ability, we'll share assessment tools to use when you encounter a student with various reading deficiencies. (Future chapters of this text will discuss the instructional strategies that are necessary to move students forward in their mastery of these key literacy skills.) Finally, we'll discuss how to determine if a text is at the appropriate level for your students, given your understanding of their literacy levels.

I. What It Means to "Read"

When working with students with lagging literacy skills, many teachers have thought or articulated, "these kids just can't read!" in a moment of frustration. As we noted in the introduction to this chapter, this statement may not be entirely true: "reading" has several distinct layers of meaning most people

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lump together, but teachers must learn to separate in order to appropriately instruct their students. At first cut, the ability "to read" is best separated into the following two major buckets:

- **Decoding** is the process that readers use to quickly and automatically translate the letters or spelling patterns of written words into speech sounds. Getting to that goal requires many steps. Book and Print Awareness, a critical foundation for decoding, involves understanding the function of print and the characteristics of books and other print materials.[10] The strand of decoding then progresses to skills such as being able to differentiate the /ch/ sound in *chair* from the /tr/ sound in *train* (Phonemic and Phonological Awareness), knowing that the letter *c* makes the /k/ sound when followed by the letter *o* or *a* (The Alphabetic Principal and Phonics), and knowing how to divide and subsequently read multisyllabic words based on an understanding of prefixes, suffixes, and roots (Word Recognition). Most importantly, these skills must all be executed so automatically that little cognitive energy is expended, and students' minds are free to focus on making meaning of the text.

Decoding					Comprehension		
Book and Print Awareness	Phonemic and Phonological Awareness	The Alphabetic Principle and Phonics	Word Recognition	Fluency	Background Knowledge	Vocabulary	Comprehension Strategies

- **Comprehension** is the ability to actively listen to, read, and understand language. To comprehend a text, one's decoding skills must allow for **fluent** reading (reading that is as smooth and full of expression as when we talk), thus allowing a reader's cognitive energy to be used to draw connections, ask questions, make predictions, and employ other comprehension strategies used by strong readers. Thus, fluency is often called the "bridge" from decoding to comprehension. In addition to fluency and effective application of comprehension strategies, other key ingredients to comprehension include vocabulary knowledge and background knowledge. Some startling vocabulary statistics to consider:

> A high-performing first grader knows about twice as many words as a low-performing one and, as these students go through the grades the differential gets magnified. By 12th grade, the high performer knows about four times as many words as the low performer.[11]

Given that students need to know about 95 percent of the words in a text to understand it, the connection between word knowledge and comprehension is clear. Background knowledge is critical as well—it "serves as the foundation for all future learning and provides the 'hooks' on which students can hang that new learning about a topic."[12] Background knowledge helps us determine the meaning of words and how words are used in a particular domain (for example, knowing that the word *similar* has a slightly

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[10] It is highly unlikely that you, as a secondary teacher, will encounter students who do not know that print represents oral language, or how to hold a book, or that we read from left to right and top to bottom, or that we put spaces between sentences. These are important skills that are taught and modeled to young children, and typically mastered during the early elementary school years. Therefore, we will not discuss this skill in this text.

[11] Hirsch, E.D. Jr. "Reading Comprehension Requires Knowledge—of Words and the World." *American Educator*, Spring 2003. http://www.aft.org/pubs-reports/american_educator/spring2003/AE_SPRNG.pdf, accessed 7/1/2010, p. 16.

[12] Lapp, Diane et al. *Teaching All the Children: Strategies for Developing Literacy in an Urban Setting*. New York: The Guilford Press, 2004, p. 306.

different meaning in math than in everyday usage, or understanding a "Herculean effort" based on familiarity with Greek mythology).

Therefore, when secondary students "can't read," what might that mean? We can almost all but rule out a lack of book and print awareness. And, according to *Reading Next: A Vision for Action and Research in Middle and High School Literacy*, "very few...older struggling readers need help to read the words on a page; their most common problem is that they are not able to comprehend what they have read."[13] *Reading Next* also agrees that fluency is critical: "For some [struggling older readers], the problem is that they do not yet read words with enough fluency to facilitate comprehension."[14] Going up a layer in what it means to read, *Reading Next* also cites struggles beyond fluency:

> Others can read accurately and quickly enough for comprehension to take place, but they lack the strategies to help them comprehend what they read. Such strategies include the ability to grasp the gist of a text, to notice and repair misinterpretations, and to change tactics based on the purposes of reading. Other struggling readers may have learned these strategies but have difficulty using them because they have only practiced using them with a limited range of texts and in a limited range of circumstances. Specifically, they may not be able to generalize their strategies to content-area literacy tasks and lack instruction in and knowledge of strategies specific to particular subject areas, such as math, science, or history.[15]

Thus, when you have secondary students who "can't read," many are likely struggling due to limited background knowledge, poor vocabulary, or lack of practice in applying active reading strategies to make sense of the text, as opposed to struggling with actually decoding the words on a page. However, while *Reading Next* reports that, "only 10 percent of students struggle with decoding,"[16] given the disproportionate number of students in our classrooms that have low literacy skills, you may find more than 10 percent of your students struggling with some aspect of decoding in your classroom. Most likely, those students will struggle with decoding at the word recognition level. Therefore, it will be important for you—even as a secondary content area teacher—to know how to build various decoding and word recognition skills with your students.

Now that we've unpacked the skill of reading, what does it sound like when secondary students "can't read?" Let's peer into a few classrooms to explore the literacy challenges you may need to address with your students so they can master the learning goals of your content area *and* grow in their literacy skills.

II. A Snapshot of the Challenges and Root Causes

In each section, we'll share a vignette that demonstrates a particular reading challenge, consider various root causes, and share appropriate diagnostic tools or strategies to better isolate the challenge at hand.

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[13] Biancarosa, G. and C.E. Snow. *Reading Next—A Vision for Action and Research in Middle and High School Literacy: A Report to Carnegie Corporation of New York*. Washington, DC: Alliance for Excellent Education, 2004. http://www.all4ed.org/publications/ReadingNext/ReadingNext.pdf, accessed 7/1/2010, p. 3.
[14] Ibid p. 8.
[15] Ibid p. 8.
[16] Ibid p. 11.

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7th Grade English

1. Vignette. Consider the following dialogue between a teacher and her seventh grade student. [17]

> Student: Mrs. Edwards? What's this word? [Pointing to *concerned*.]
> Mrs. Edwards: Did you sound it out, George?
> George: [Long pause.] No.
> Mrs. Edwards: Well, there you go. You need to sound it out.
> George: Sound out what?
> Mrs. Edwards: The word. Sound out the word.
> George: Huh?
> Mrs. Edwards: Go slowly and sound out each syllable.
> George: [Looking at the word closely.] Okay. [Long pause.] Well. How do I sound it out if I can't read it?
> Mrs. Edwards: No, you can sound it out so you *can* read it.
> George: Huh?
> Mrs. Edwards: Like this. [Points to each syllable in the word.] /Kun/ /Sernd/.
> George: Oh, ok. [In a not very convincing tone.]

2. Root Cause. Looking back at the literacy graphic on page eight, would you place George's major challenges in the decoding bucket or the comprehension bucket? That's right, decoding. But what specific aspect of decoding, given its many layers? While we don't know with the information provided in the dialogue, it could be one of the following:

- **Phonological Awareness**, or the understanding that spoken language is composed of units of speech, such as words, syllables, rhymes, onsets (the initial consonant sound of a syllable; **b**- in **b**ag, **sw**- in **sw**im) and rimes (part of the syllable that contains the vowel and all that follows it; **-ag** in b**ag,** -**im** in sw**im**). **Phonemic Awareness**, a subset of phonological awareness, is the understanding that words are made up of individual sounds, and the ability to identify those sounds. Neither skill requires knowledge of print.
- **The Alphabetic Principle and Phonics** involves understanding the relationship between spoken sounds and written letters, such as knowing that the letter "p" makes the /p/ sound and knowing how to write that letter as part of the word "pat."
- From the information provided in the vignette, George's **Word Recognition** skills seem weak, since he doesn't automatically recognize the word. He also seems unable to visually break the word down into familiar parts, by recognizing /con/, /cern/, or the /ed/ ending.

3. Diagnostic Tools. How do we, as secondary teachers with perhaps 149 other students, determine the specific problem of a student similar to George?

- If you can carve out time for an individual diagnostic before school, after school, or during lunch, you might give the student a Phonological Assessment, similar to one an elementary teacher would give his or her students. (You will have access to a Phonological Assessment, found in CORE's *Assessing Reading: Multiple Measures,* at the summer institute and in your regional offices.) This assessment would give you insight into where the student's specific problems lie: can the student hear and count the syllables in a word, identify and count various sounds in a word, and identify words that rhyme and don't rhyme? However, lack of phonological and phonemic awareness is probably not the issue for George, and will be for very few secondary students unless they have an auditory processing

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[17] Modified from Beers, Kylene. *When Kids Can't Read: What Teachers Can Do*. Portsmouth, NH: Heinemann, 2003, p. 11-12.

disability. If Mrs. Edwards read the word out loud and asked him to identify the sound that *concerned* started with, he could probably say /k/. If she probed, "how many syllables are in the word *concerned?*" George would probably repeat, "Con-cerned. Two syllables." If she asked him if the word *concerned* rhymed with *learned*, he would probably respond in the affirmative. These are all skills typically learned in Kindergarten through second grade.

- If poor phonological awareness can be ruled out with a quick conversation, you might adjust your schedule to individually administer a Phonics Survey. This assessment asks a student to identify letters in the alphabet, tell the various sounds made by each consonant and vowel, and read from a list of real and pseudo words, such as *sip* and *vop* to see if they can read words with short vowel sounds, and *lute* and *joad* to identify long vowel spellings. (Again, you will have access to such an assessment through CORE's *Assessing Reading: Multiple Measures*.) However, such a formal survey may not be necessary; taking a few minutes to do the following can provide key insights into a student's phonics skills and help you determine if a more comprehensive phonics diagnostic is necessary:

> Spend some time...asking them to name the letters (graphemes) in specific words. [So you might point to the letters in *concerned* and ask the student to name the letters in the word.] Ask them to identify what sounds those letters make. [What sound does *n* make? What sound does *c* make? Does *c* make another sound?] You're listening to hear what letter-sound correspondence each student has...You can also show them consonant digraphs such as *sh*, *ph*, or *th* and blends such as *tr*, *st*, or *bl* and ask students to tell you what sounds those pairs of letters make. You can show them vowel teams such as *ai* or *ee* and ask them what sound the vowels would make. Put these letter combinations into the context of a word. [Look at this word (*meet*). What sound do the two *e*'s make in this word? Can you read the whole word for me? What about *mail*?][18]

- Another easy-to-administer assessment for a student with George's symptoms is a Qualitative Spelling Inventory, where you give students a series of progressively more challenging words (meaning you begin with single-syllable, short vowel words like *bed* and progress to two syllable words with unusual spelling patterns like *hoping* and *squirrel*) and compare their spellings to the stages of spelling development. Analyzing a student's spelling, in particular the mistakes he or she makes, will shed light on his or her knowledge of sound-symbol correspondence. This sort of assessment can also be easily administered on a class-wide level, and used by secondary teachers to get a general sense of all of their students' phonics skills and their understanding of letter-sound relationships. For a sample Qualitative Spelling Inventory, see the **Secondary Literacy Toolkit** (p. 1) found online at the Resource Exchange on TFANet. �֎ Another is contained in CORE's *Assessing Reading: Multiple Measures*.

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[18] Beers, Kylene. *When Kids Can't Read: What Teachers Can Do*. Portsmouth, NH: Heinemann, 2003, p. 233.

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- Finally, you should ask a student with reading difficulties like George to read from a Word List, which contains short lists of progressively more challenging words. When a student says a word incorrectly or skips it, the teacher records that as a "miscall." By noting the grade level of the word list where a student begins to have a critical mass of miscalls (different tests have different definitions of that "critical mass," most say to stop when a student reads five words for a grade level incorrectly), the teacher can approximate the grade level of the student's word recognition abilities. Sample Word Lists are available in the **Secondary Literacy Toolkit** (p. 2); this Toolkit can be found online at the Resource Exchange on TFANet. Another sample, called the *San Diego Quick*, is contained in CORE's *Assessing Reading: Multiple Measures*. ✘

> *Willie Taylor's reading diagnostic indicated that he was reading on a second grade level in an eleventh grade English class. So, during class I pulled him aside and had him read a short passage aloud. Listening to him read, his inability to decode certain words became apparent and I requested that he spend extra time with me before and after school during the week. During these times, we created sound charts that he could use when he read and found books that were appropriate for his reading level. By the midpoint of the year, he had already raised his reading level from a 2.0 to a 3.5.*
>
> **Matt Kelley, Mississippi Delta '02**
> **9th Grade Literature Teacher**

If any of these diagnostics reveal that a secondary student can't identify sounds in spoken words or recognize letters and identify the sounds those letters make, he or she probably needs specialized help. You may consider speaking to the special education teacher at your school for guidance about how to provide this student the remediation he or she needs. Students with weak word recognition skills, which could be determined by having them read from a Word List, are not uncommon in upper grades. Chapter Two will discuss strategies for improving students' word recognition.

9th Grade Literature

1. Vignette. Kylene Beers, author of *When Kids Can't Read, What Teachers Can Do*, shares the following transcript from a ninth grade student's oral reading of the opening lines of "The Gift of the Magi" by O. Henry, a short story commonly found in high school literature anthologies. (You may recall the story: Della sells her long brown locks to buy Jim a chain for his prized watch, he sells his watch to buy Della a set of coveted hair combs. Ah, the irony.) First, read the opening lines yourself:

> One dollar and eighty-seven cents. That was all. And sixty cents of it was in pennies. Pennies saved one and two at a time by bulldozing the grocer and the vegetable man and the butcher until one's cheeks burned with the silent imputation of parsimony.[19]

Now, read the stumbling—yet real—transcript from Beers' student. His reading is in italics:

> *On-one d-d-do-l-l-ar and, and eight-eighty-sev-eighty-seven c-ents.   Th-that w-was all.*
> One   dollar   and   eighty-   seven cents. That   was   all.

> *And eight-six and six cents of it was in pen-pens pens   saved One, one twi-two at a*
> And   sixty   cents of it was in pennies. Pennies saved one and   two at a

> *time. By b-b-bull, bulldozers, by the bulldozers the gro-groc-er and the*
> time   by bulldozing   the grocer   and the

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[19] http://www.online-literature.com/o_henry/1014/, accessed 7/1/2010.

veg-vegetar-veternarian man and the but-cher, butcher man until one, one check, one check
vegetable   man and the butcher   until one's cheeks

got burned, burned up, with the si-slice im-impo-impossible...of par-parts-pars-i-my.
Burned   with the silent imputation   of parsimony...

When asked what these first four sentences were about, he responded:

I don't know. [Pause.]   I guess, somebody, [pause] there was like a bulldozer, and somebody's check, the check it got burned up, into parts. [Pause.] I don't know. [Long pause.] You know I can't read this stuff.[20]

2. Root causes.   How would you diagnose this student's root problem?   That's right, we're still in decoding, but his halting reading probably made you think about word recognition and fluency as well.

- This student has **weak phonics skills.** If you analyze his transcript, you will note that he especially has trouble decoding multisyllabic words.   How did a ninth grade student come to read at this level of deficiency?   Most likely, he has constantly been given texts that are too hard for him. Without enough practice reading words he can easily decode, so that those words move into his automatic word bank, he will never build his word recognition and corresponding fluency.

> *Many struggling readers have failed more often than they have succeeded in the past, so now they figured, "Why try?"*
>
> **Shannon Dingle, RGV '03**

- Therefore, his automatic **word recognition skills are also extremely weak**. When faced with words he couldn't immediately identify on sight, he would sound out one letter or one syllable at a time. Several times, he identifies the opening sounds of the word, but then guesses at the rest (*veg-vegetar-veternarian* for *vegetable*, *si-slice* for *silent*).
- His weak phonics skills and word recognition skills lead him to have **poor fluency,** which is defined as the ability to read words quickly, accurately, and with good expression.   Fluency, as you'll recall, is key to comprehension, as it allows one's mind to focus on making meaning of the text, rather than being preoccupied with decoding the words on the page.

3. Diagnostic Tools.   If you encounter a student with reading deficiencies similar to the student above, there are several diagnostics you might administer:

- A **Phonics Assessment** and/or a **Qualitative Spelling Inventory,** as explained above, would create a detailed picture of this student's basic decoding skills and understanding of sound-syllable correspondence.
- Asking the student to read from a **Sample Word List,** also mentioned earlier, would help you determine the grade level of this student's word recognition skills.
- Finally, to measure this student's fluency (also called oral reading rate), you would conduct a Timed Reading Exercise with a text on this student's **independent reading level**. Let's define this important term:

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[20] Beers, Kylene. *When Kids Can't Read: What Teachers Can Do*. Portsmouth, NH: Heinemann, 2003, p. 29.

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- o **Independent Level.** If a text is on students' independent level of reading, they will find fewer than one in twenty words (5%) difficult to decode or understand the meaning of. To roughly determine if a text is at a students' independent level, some teachers use the "five finger rule", where the student is asked (and taught, so he can use this method to choose texts he reads on his own) to read an approximately 100-word passage and put up a finger every time he comes across a word he can't read. If he puts up fewer than five fingers, the text is at his independent level and he will be able to read it and comprehend it without assistance from the teacher; the process of doing so will also build his fluency, due to the repeated exposure to words he already knows.

- o **Instructional Level.** When students recognize 90 - 95% of the words in a text (so 5 – 10 fingers go up) the text is at their instructional level. In that range, we know that students, with support from the teacher, will expand their vocabulary and will be able to comprehend the text. A text at students' instructional level is a perfect text to be read with teacher support and instruction in word recognition, vocabulary, and comprehension strategies.

- o **Frustrational Level.** If a student has difficulty with the pronunciation or meaning of more than two out of every twenty words in the text (so recognize fewer than 90% of the words), that student is reading at a "frustration level." This delineation and definition is important because we know that students who are constantly reading at their frustration level have significant trouble understanding the reading and usually lose motivation to continue reading. If students are experiencing this rate of error, the teacher probably needs to shift to a more manageable text.

Obviously, the passage from the *Gift of the Magi* is at our example student's frustrational level; in a passage of only 45 words, he stumbles over the vast majority of them. To measure his fluency level accurately, you would need to find a text on his independent reading level—which you could pinpoint more easily using the results of a Word List assessment or by applying the "five finger rule"—and then you would conduct a Timed Reading Exercise. At the elementary school level, such an assessment is commonly used to track students' "oral reading rates." Though reading rates can vary according to texts (even a skilled adult reader may need to slow her reading rate significantly if she is reading an entirely unfamiliar text such as a passage from an aerospace engineering textbook), we have a good sense of the speed students should be able to read at each grade level. The chart below outlines targeted reading rate norms for students in grades one through eight when they are reading texts on their independent level. [21]

Grade	Fall Oral Reading Rates (words correct per minute)	Winter Oral Reading Rates (words correct per minute)	Spring Oral Reading Rates (words correct per minute)
1		10 – 30	30 – 60
2	30 – 60	50 – 80	70 – 100
3	50 – 90	70 – 100	80 – 110
4	70 – 110	80 – 120	100 – 140
5	80 – 120	100 – 140	110 – 150
6	135 – 160		
7	140 – 175		
8	150 – 180[22]		
Adult	Adult readers typically read more than 300 words per minute.[23]		

[21] Grade 1 – 5 information adapted from Rasinski, Timothy. *Assessing Reading Fluency* by Timothy V. Rasinski, www.prel.org/products/re_/assessing-fluency.htm, accessed on 7/1/2010.
[22] Grade 6 – 8 information adapted from "Fluency Chart for Reading." *New England Common Assessment Program Reading Grade-Level Expectations*. http://www.conval.edu/sup_corner/curriculum/la_curr/fluency.htm.

A Timed Reading Exercise is relatively easy to administer.

1. First, **choose a text or passage on the student's independent level** with at least 200 words.
2. Before you begin, **give the student a quick overview of** the passage and explain what you are asking her to do. *"Taylor, we're going to spend about 5 minutes measuring your reading fluency – remember that means how well you can read like you talk. We're working on improving your reading fluency because if you have good fluency, your brain has the space to understand what you read. The passage you're going to read today is about the Gold Rush, one of the factors that caused westward expansion in the United States. Please begin reading it at a rate that is comfortable for you. If you make a mistake, you can correct yourself. If you come to a word you don't know, try to figure it out on your own. Does that sound ok? Alright, go ahead."*
3. Decide how many minutes you want the student to read (between one and five minutes). At the appointed time, stop the student. Tally the total number of words read (correct or incorrect) and divide it by the number of minutes. This result is their **oral reading rate**, in words per minute, for the text that they read. Compare the results to the above chart.
4. You might also rate the **students' overall fluency/prosody** by placing students into one of three levels:
   a. Level 1: student reads a word at a time in a halting manner, often has to sound out words, and reads without expression or attention to punctuation.
   b. Level 2: reads with some expression and attention to punctuation, may stop to sound out some words or repeat words.
   c. Level 3: reads smoothly with good expression, phrasing, and attention to punctuation; any repetition of words is to self-correct mistakes (which are generally rare). [24]

Some teachers continue to flesh out a student's reading level, specifically the errors (also called "miscues") that students make by conducting a **Running Record.**

1. As the student reads, follow along on your own copy and **take note of all miscues**. For example, if the student self-corrects (student says "Manifest Destined…no, Destiny"), that should be noted. If the student inserts a word that isn't there (text says "panned for gold" and student says "panned for lots of gold"), note that miscue. If a student omits a word (text stays "endured many hardships" and student says "endured hardships"), note that. If the student starts to sound out a word but struggles, wait about three seconds, and either tell the student the word (noting that) or tell the student to skip it (noting that). To help you understand this process, your might want to refer to the **Secondary Literacy Toolkit** (pp. 3-4; a student's "Sample Running Record"); this Toolkit can be found online at the Resource Exchange on TFANet. ✕
2. This analysis would allow you to see where a student's decoding and fluency breaks down – does she struggle with multisyllabic words? If so, does she simply articulate the initial sound and then substitute another word that starts with the same sound? Can she read the first syllable of most words?
3. A running record also allows you to **confirm the level of a text** for the student (independent, instructional, or frustrational). To do that, count the total number of miscues. Divide that number by the total number of words read: for example, 10 miscues in 200 words is a 5% miscue rate. Subtract that rate from 100% accuracy, and you have 95% accuracy, which means it is on the student's independent level. [25]

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[23] Moats, Louisa C. "When Older Students Can't Read." *Educational Leadership* (March 2001): 36-40. http://www.cdl.org/resource-library/articles/older_read.php, accessed 7/1/2010.
[24] Modified from Beers, Kylene. *When Kids Can't Read: What Teachers Can Do*. Portsmouth, NH: Heinemann, 2003, p. 211.
[25] Ibid.

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Strategies for improving word recognition and increasing fluency will be discussed in chapter two.

High School Physics

1. Vignette. In *Subjects Matter*, authors Harvey Daniels and Steve Zemelman describe their interaction with students in a freshman physics class, where students are solving real-world problems that involve the relationship *rate = distance/time* and its various permutations. One problem describes a peregrine falcon that dives for a poor, earth-bound rabbit 100 meters below. The problem asks students to answer the following question: if the rabbit notices the falcon when it begins its 100 meter dive to grab it for dinner, how much time does the rabbit have to hop away and save itself? The following dialogue ensued with many students:[26]

> Student: I need some help!
> Steve: So, what do you think is going on in this problem?
> Student: I don't know.
> Steve (*searching to see what the student does and does not understand*): Well, what's the scene? What does the problem say is happening here?
> Student: Silence.
> Steven: Ok, let's read it aloud. You start.
> *Student reads the problem out loud, at a decent pace and only stumbling over the word peregrine.*
> Steve: So now tell me what is happening in this situation?
> Student: Well, there's a bird, a...per...per...*(struggles with the pronunciation of peregrine and then just skips over it)* falcon.
> Steve: That's right, there is a peregrine falcon. That is a type of falcon that is particularly known for its swift flying speed. And what is the peregrine falcon doing?
> Student: Well...it says right here he's diving.
> Steve: *(suspecting the student doesn't understand the concept of a falcon diving for its prey)* Ok, can you describe what is happening in your own words?
> Student: Well, he wants to eat the rabbit, but I don't really get how he is going to catch it.

2. Root causes. You probably placed this student's challenge on the comprehension side of reading, and you're correct. There are several comprehension pieces that are lacking.

- **Background knowledge and vocabulary.** The student is lacking the necessary background knowledge to understand the word problem. She has little familiarity with a falcon diving for its prey. The vocabulary trips her up too. She doesn't know what a peregrine falcon is, which isn't critical to understanding the problem and determining how to solve it, but she really has no understanding of the verb "dive" in this context. All of these factors combine to produce an entirely muddled picture in her mind.
- **Inability to apply comprehension strategies.** This student, once she had the appropriate background knowledge (which could come simply by having the teacher explain the scene between the falcon and rabbit), would probably visualize the math problem in her head, or draw a picture that would help her solve it. That is what many of us automatically did when we first read about the problem above: we visualized a falcon swooping down towards a trembling rabbit below, talons extended, to grab the rabbit by the scruff of its neck and swoop away. We can do this because we've seen this on a nature documentary, or we've seen it in real life. Visualization is a key comprehension strategy that helps us solve this particular problem (other comprehension strategies include asking questions, making

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[26] Modified from Daniels, Harvey and Steven Zemelman. *Subjects Matter: Every Teacher's Guide to Content-Area Reading*. Portsmouth, NH: Heinemann, 2004, p. 233.

connections, making predictions, inferring, and summarizing, and will be discussed in more detail in chapters three and four), and this student isn't able—nor perhaps has she been taught—to utilize this strategy.

3. Diagnostic tools. While vocabulary diagnostics exist, as a secondary teacher you can almost assume that the students you teach will have a more limited vocabulary than is typical of their peers in higher-income communities, especially of the more specialized words in your content area. Consequently, you can go straight to implementing strategies that will improve students' vocabulary knowledge, which we discuss in chapter two. Similarly, no diagnostic exists for assessing students' background and general "world" knowledge, but you should constantly be building and activating their background knowledge through various pre-reading activities, which are discussed in chapter four. However, there are a variety of ways to assess a student's overall comprehension skills.

- **Comprehension Retell Assessment.** As the name implies, this assessment requires a student to retell a story he or she reads to the teacher. By recording what aspects of the story the child recognizes and retells, the teacher establishes a picture of the student's comprehension skills. For an example, see the **Secondary Literacy Toolkit** (pp. 5-7: "Sample Comprehension Retell Assessment"), which can be found online at the Resource Exchange on TFANet. ✂ However, you could conduct a comprehension retell with a passage specific to your course as well. When a Comprehension Retell Assessment is done as part of a Qualitative Reading Inventory, or QRI, the teacher can measure a variety of skills—such as reading comprehension, fluency, and accuracy—to determine a students' general literacy level. There are multiple specific procedures for this type of assessment, and multiple published versions, but QRIs often involve a student reading a graded text out loud while the teacher records speed and accuracy; after the reading, the student responds to comprehension questions posed by the teacher. Typically, a QRI requires 30-45 minutes to administer to an individual student.

  I use several diagnostics in combination with each other—principally, the SRI (Scholastic Reading Inventory), a computerized test that gives a quick-and-dirty look at the approximate level of each student, and the QRI (Qualitative Reading Inventory). The QRI gives an amazingly in-depth look at each student's "level" with varying levels of texts and knowledge backgrounds. It takes a while to administer (about 45 minutes a kid) but is the BEST use of time. It gives a wealth of information: students' issues with fluency, phonics, comprehension, texts of different genres. Once I administer the QRI and know where all the students are at, I form guided reading groups and make instructional plans for each student for the year.

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- **Reading Habits Checklist.** Another relatively simple approach to assessing your students' use of comprehension strategies is through a "reading habits checklist." This is a table with characteristics of strong readers (discussed more in chapter three) that you can keep on a clipboard and fill out through informal observations and evaluations over a period of time. The students' reading strengths and weaknesses begin to emerge as patterns on the grid.

The above diagnostics, when necessary to administer in a secondary content area classroom, will show you the type and intensity of literacy instruction you need to infuse into your instruction. The diagnostic results will also serve as a valuable baseline to which you can compare your students' literacy progress later in the year. While the wide range of student reading abilities found in a given class of students may be shocking, unsettling, and initially overwhelming, much more disturbing is the prospect of attempting to teach students the learning goals of your content area—which will require students to read—without

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even knowing that this variance exists. If you carefully diagnose students' literacy skills at the beginning of the year, or when a problem becomes evident as an individual student reads aloud, you will be able to begin thinking about how to best differentiate instruction so as to maximize the academic gains of all students.

In addition to knowing the reading strengths and weaknesses of your students, it is also extremely helpful to know the reading level for which a text is designed, which is the subject of the next section.

III. Determining a Text's Difficulty

One of the common characteristics of teachers who effectively teach literacy in their content area is an ability to judge the relative demands of a text and adjust their instruction appropriately. These teachers can read a text and recognize what aspects of the reading are going to be difficult for their students, based on their knowledge of students' decoding and comprehension skills. Often, this judgment is used to decide not whether to use a text (unless the discrepancy between students' reading level and the text level is too vast), but what types of instructional methods and support should be used while teaching a text. That is, the accessibility of a text depends not only on students' literacy skills but also on the types of comprehension support that the teacher provides before, during or after students read, strategies that will be addressed in future chapters. Here, we will focus on what savvy teachers look for in texts as they assess a text's difficulty.

Qualitative Variables of Text Difficulty

Although your students may disagree, a content area text is not simply "too hard" for a student to read. When previewing a text to determine its appropriateness for building student understanding about a topic, there are several more qualitative characteristics that could make it "too hard" (or, "too easy") for students. Consider some of the factors that you will need to weigh to determine whether or not to use a text, and what support to provide before, during, and after reading it:

> *Someone suggested to me early in my first year that I simply rewrite everything in my 8th grade history textbook into easier worksheets, and forget the books. No wonder my kids' reading levels weren't improving- and they were bored to boot. The harder (but much more rewarding) approach is to just tackle it head-on: teach the vocabulary and the context, and make sure that you take every opportunity to support their comprehension.*
>
> **Kelly Harris-Perin, Delta '98**
> **Director of Learning and Development**
> **Teach For America**

- **Vocabulary.** As you are already aware, texts containing many difficult vocabulary words will present problems with comprehension; therefore, it is important to pre-teach the words students will need most to understand a text. Vocabulary instruction is critical for all teachers, as students will encounter new vocabulary in any new math, science, social studies, or language arts unit. We will discuss vocabulary instruction, and how to determine which words to explicitly teach students to prepare them to comprehend a text, in chapter two.

- **Background Knowledge**. As you also read above, reading a selection for which students have little background knowledge also makes comprehending the passage more difficult. Students are much more likely to comprehend what they read if teachers help them connect new information to prior knowledge and experiences, plan ways to build their background knowledge, and increase their understanding of the world. Perhaps, for example, in your Algebra II class, you might read about the St. Louis arch and the formulas that the architect

used to design the arch. To optimize students' understanding of the topic, you should be sure that the students know what the St. Louis Arch is by bringing in pictures and discussing its significance.

- **Text Structure.** Long, complex passages that describe a complicated event, elaborate on a concept, or investigate causes and effects can be difficult for students to follow. Students should be taught patterns in the way information is presented in a text—such as long passages that describe the sequential events in a historical battle, or the comparison of two human body systems—so they can locate key information, identify the difference between important and unimportant information, and connect new information with what is already known. If students understand text presentation, they will be able to use the structure to help comprehend and remember what they have read. See chapter four for a fuller explanation of strategies for teaching text structures.

- **Length of Text.** Length can be a formidable obstacle for struggling readers, even if the text is consistent with their reading level. You might need to break the reading up into smaller chunks, providing opportunities to engage in conversation with the class or a partner between each segment. By tackling smaller pieces of reading successfully, students will also gain confidence in their ability to face longer texts.

- **Interest Level.** Not surprisingly, a student's level of interest in a text makes reading more or less difficult; when a student is motivated to read because he is interested in the topic, reading is easier and comprehension is greater. By knowing your students' interests and past experiences (information you might glean from informal conversations with students or by reviewing a student interest inventory) you can review a text and quickly determine if it will spark a flame of interest in students or lead them to sigh with boredom while reading it.

Of course, there is no magic formula that will tell you how to weigh all these various factors together. By asking yourself about the strength of a text for each of these variables, however, you will develop a sense of how students will receive the text and what supplemental activities you can plan to bring the text within students' reach.

Attempts to Quantify Text Difficulty
Many science, math, and social studies textbooks are written at a much higher grade level than their actual audience; knowing the specific level will help you make decisions about how you will use various texts. Various researchers and teachers have attempted to quantify this judgment process. Here we will briefly describe three of the better-known tools that approximate the level of a text's difficulty when only sentence length and word difficulty are considered. The result is an estimation of the grade-level appropriateness of a particular text. These tools do not measure elements of text difficulty such as required background knowledge or interest level.
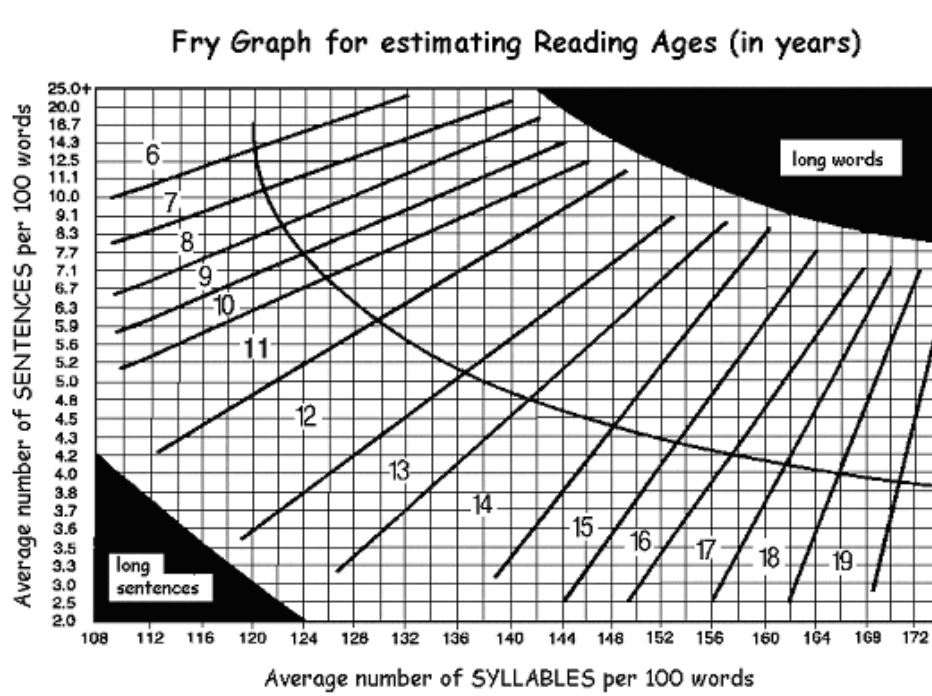
Your Computer. You may be surprised to learn that your computer, if you have a Windows operating system, may be able to give you a rough estimate of the "readability" of your texts in Microsoft Word. Here's how: create a new Word document; go to *Options* in the *Tools* dropdown. Choose the *Spelling and Grammar* tab. Select the box for *Show Readability Statistics*. Type in a passage from the book, highlight it, and choose *Spelling and Grammar* from the *Tools* drop down. After the spell check, a box will pop up that shows a variety of statistics about the passage: the number of sentences per paragraph, the number of words per sentence, the number of characters per word, and the "Flesch-Kincaid Grade Level." This grade level is calculated primarily on the basis of average sentence length and the average number of

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syllables per word, not level of challenging vocabulary or required background knowledge. For example, a Flesch-Kincaid score of 8.0 means that an average eighth grader would be able to understand the text.

Fry Readability Graph. Edward Fry, formerly of the Rutgers University Reading Center, created one of the most widely used readability graphs for educators.[27] We will acknowledge up front that the steps required to use this graph take significant time, but they are sometimes necessary to accurately pinpoint the text's reading level. To use the graph,

- Randomly select three 100-word passages from a book or an article.
- Plot the average number of syllables and the average number of sentences per 100 words on the graph to determine the grade level of the material.
- Choose more passages per book if great variability is observed or if you conclude that the book has uneven readability.
- Few books will fall into the solid black area, but when they do, grade level scores are invalid.

Fry Graph for estimating Reading Ages (in years)

Fog Index Score. The Fog Index Score is another challenging but still helpful tool for analyzing the complexity of any particular type of writing. Although a Fog evaluation achieved with this scoring is not absolute (and there can be many variations even within the same text), the Fog method is a good way to *start* an evaluation of the complexity of a piece of writing.   Below are the steps to follow:

1. Jot down the number of words in successive sentences in a sample of writing approximately 100 words in length. If the piece is long, you may wish to take several samples of 100 words, spaced evenly throughout the text. Divide the total number of words in the passage by the number of sentences. This gives the average sentence length of the passage.
2. Count the number of words of three syllables or more per 100 words. However, don't count the words (1) that are capitalized; (2) that are combinations of short easy words (like "bookkeeper" and "butterfly"); and (3) that are verb forms made three syllables by adding "-ed" or "-es" (like "created"

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[27] Fry, Edward. *Elementary Reading Instruction*. New York: McGraw Hill, 1977, p. 217. Online at http://school.discoveryeducation.com/schrockguide/fry/fry.html , accessed on 7/1/2010.

or "trespasses"). Divide the exact number of three-syllable words by the exact number of words in the passage. This gives you the percentage of hard words in the passage.
3. To get the Fog Score, add the average sentence length to the percentage of hard words. Multiply by 0.4.

The final number is *approximately* the number of years of education (not counting Kindergarten) needed to easily and quickly completely understand the writing sample.

Again, the qualitative and more quantitative measures of a text's difficulty should primarily help you determine how much support will be necessary to help students comprehend the reading used during instruction. When students are going to read a text independently, and therefore have less support from you, you may need to seek out lower-level texts to build students' fluency and confidence. Sean Flammer (Mississippi Delta '02) teaches high school social studies in an alternative school, and he integrated high-interest, lower-level historical novels into his curriculum for certain students who might otherwise be incapacitated by frustration during independent reading time:

> For some of my students, they've gone 10 years without the ability to read a book in class. Reading for them was an embarrassing chore that deflated their self-image and drove them to hate school. Now they can enjoy reading on their own. I've seen a remarkable improvement in their happiness levels and their self-esteem; they now are more confident and well behaved, and they are excited to learn.

Note that it is not enough to simply lower the level of the texts you use in the classroom; to do so would be to surrender the high expectations that we must uphold to improve our students reading skills. Nor is it enough to teach your students enough literacy skills to "get by" in your class. Your goal as a secondary teacher of English or any other content area is to use appropriately challenging texts while simultaneously building students' literacy skills enough to move them to the next stage of reading proficiency. Granted, you will bear the double-weight of simultaneously building students' basic reading and writing skills while at the same time leading them to the goal of mastering the skills and concepts of your content area. All future chapters of

Example of Fog Index Implementation
"It is the **opinion** of the writer that it is the **appropriate** moment to **re-examine** the style of writing which might most **effectively** be used by members of the **engineering profession.** It is also the writer's belief that a long-lasting **tradition** about the **inappropriateness** of the active voice and the **personal** pronoun for **technical** writing has made for a great deal of **inefficiency.** This kind of writing has been **exemplified** in the past by **numerous national publications**. It would appear that an **application** of the **principles** of **engineering** to the problem would be **beneficial** and it would seem the result might be that such a style would be **eliminated**."

1. number of words: 109; number of sentences: 5; average sentence length: 22 words.
2. words of 3 or more syllables: 20; difficult words per 100 words: 18.
3. average sentence length added to percentage of difficult words per 100 words: 40; 40 multiplied by 0.4: 16.

The Fog Score is 16—that is, the reader needs about 16 years of education (college senior) to read the paragraph easily.

[Note: When we used the Fry **Readability** Graph and the Fog Index to **evaluate** the **complexity** of the **curriculum** you are reading right now, we found out why one must truly take **multiple** samples when **analyzing** longer texts. The first sample suggested that the **curriculum** was **appropriate** for readers with **approximately** twenty-one years of **education**, while the second sample yielded a required eight years of **education.** After taking **numerous** samples and computing the mean, we found that the **curriculum** text is **appropriate** for readers with about sixteen years of **education** beyond **Kindergarten** - how **convenient**!]

this text, and the sessions you will attend at the institute, will provide instruction in the various pieces that are necessary for creating such a learning environment.

Conclusion

In this chapter, we illuminated the wide range of things that can be meant when a teacher says, "my students can't read the textbook." We also discussed how to diagnose a specific reading problem based on what you see and hear when students read, and how to find texts that are on the appropriate level for your students.

- There are many different layers to reading – ranging from the ability to "read" the word *biology* because students know all the sounds made by the letters *b*, *i*, *o*, *l*, *o*, *g*, *y* and how the sounds blend to make the word *biology* (Decoding), to having seen the words *mammal*, *cellular*, and *carbon dioxide* so many times that they recognize them automatically and don't need to spend mental energy decoding them (Fluency) to understanding the meaning of the specialized biology vocabulary, having appropriate background knowledge, and utilizing comprehension strategies (Comprehension).

- Your students could struggle with some or all of these aspects of reading. It will be necessary, in order to appropriately build your students' reading skills, to determine the specific areas of deficiency by either collaborating with the English/Language Arts teacher or administering an appropriate diagnostic yourself. Some tools to diagnose student decoding and fluency include a Phonological Assessment, a Phonics Survey, a Qualitative Spelling Inventory, Word Lists, and a Timed Reading Exercise. To diagnose comprehension levels, you could administer a Comprehension Retell, or a QRI.

- Finally, you are now aware of techniques for recognizing the demands of a text, such as scrutinizing its vocabulary, required background knowledge, length, and text patterns, as well as for quantifying its difficulty by using the Fry Graph and the Fog Index—or even your computer.