Navigating Complex Text:
What Students Need to Know and What to Teach

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Many students who graduate from high school face significant challenges in college related to their reading ability. These challenges stem from an inability to navigate complex text. Indeed, a seminal study (ACT, Inc., 2006) suggested that success with complex text predicts success in college. The inability to navigate complex texts is, in part, the result of a steady decrease in the complexity of textbooks in Grades 4 and up while, at the same time, the complexity of college textbooks has either remained the same or increased (Chall, 1977; Hiebert, 2014; NGA & CCSSO, 2010; Williamson, 2008). This means that a graduating high school senior who reads grade-level texts with 75% comprehension may be reading with less than 50% comprehension a few months later as he or she encounters college-level texts (Williamson, 2008). In an analysis of 800 texts, Hayes, Wolfer, and Wolf (1996) found that simplified texts have an unexpected and undesirable side-effect. These texts deny students the very things they need—knowledge, vocabulary, syntactic awareness, modes of thinking—to successfully comprehend more advanced texts in college (Adams, 2010).

College and career readiness standards call for students to read grade-appropriate complex text independently and proficiently. This mandate aims to reduce the disparity between what students are able to read and comprehend by the end of Grade 12 and what they need to read and comprehend to succeed in college. Understandably, complex text is foremost on the minds of middle- and high-school educators and administrators across the country. This paper will explore questions about text complexity: what is it; how is it evaluated; what do students need to know to navigate through it; and what instruction helps students navigate through it?

What is Text Complexity?

The purpose of having students read complex texts is to increase their knowledge of the world and vocabulary, which in turn will enable them to read increasingly more complex texts (Hiebert, 2013, 2014). Understanding what makes a text complex is helpful in choosing the best texts to meet instructional goals and student needs and improve students' ability to navigate complex texts.

Text complexity is not simply a measure of the length of the words or sentences. Nor, is it simply a measure of the difficulty of the vocabulary. It is both and more. Text complexity is a tripartite evaluation (NGA & CCSSO, 2010). Two parts of a complexity evaluation measure the text itself. The quantitative part measures the number of syllables in words, number of words in sentences, and number of rare words. In other words, **how** the text is complex. The qualitative part takes into account: the meaning and purpose, the layout of the text, the overall language, the complexity of ideas, the knowledge required for understanding, and the structure of the text. In other words, **why** the text is complex. The first part of the complexity evaluation can be achieved through objective formulas or measures, such as Flesch-Kincaid, Dale-Chall, Degrees of Reading Powers®, ATOS, or Lexiles®. The second part is subjective, requiring educators to evaluate key features of a text. The third part of the evaluation matches the text to the reader and the task. **Who** is the reader? **What** is the task? The answers to these questions will determine what kind of scaffolding and how much scaffolding the reader will need to complete the task. Williamson, Fitzgerald, and Stenner (2013) provide this important caution:

> "Stretching challenge levels for text during classroom instruction when teachers are providing scaffolding and other forms of support presents a very different challenge to many students than stretching challenge levels for text when they are reading independently" (p. 65).

The tripartite evaluation is a set of complementary measures of text features that are considered in concert with instructional goals and student needs—and always with the overarching goal of increasing students' knowledge of the world and vocabulary.

How is Text Complexity Evaluated?

For the purpose of illustrating the evaluation of text complexity, a short story, *A Dog's Tale* by Mark Twain, and a speech, *We Shall Fight on the Beaches* by Winston Churchill, will be used. Before beginning a text complexity evaluation, it is important to ask a few preliminary questions (Hiebert, 2014):

- What value does this text have?
- What knowledge, vocabulary, ideas, and insights can students gain from the text?
- Is the text worthwhile?

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Background information about the text, the author, and the author's overall purpose are helpful in answering these questions. For example:

- American writer and humorist Mark Twain, who strongly opposed experimental surgeries on animals (called *vivisection* by opponents), delivers a bittersweet portrayal of the steadfast trustworthiness of dogs and the capricious and sometimes callous behavior of humans in *A Dog's Tale*.
- On June 4, 1940, newly appointed Prime Minister Winston Churchill prepares his colleagues in the House of Commons—and the entire British Empire—for a long and fierce fight while instilling courage and hope through his repetition of "We shall" in his memorable speech *We Shall Fight on the Beaches*.
- Each writer furthers a cause—ending vivisection for Twain and steeling a nation for Churchill.

In answering these questions, it would seem both texts are worthy. Now, more information is needed about the quantitative and qualitative features of these texts to determine the reader and the task.

Quantitative Features

There are free online analyzers (e.g., www.readabilityformulas.com; www.lexile.com) that can be useful for evaluating a text's readability, or quantitative features. The results will vary according to what the different formulas evaluate and how much of the text can be evaluated. The quantitative analyzers used to evaluate the texts of *A Dog's Tale* and *We Shall Fight on the Beaches* are found in Table 1, along with the scores. The maximum text allowed for each analyzer was used.

The Flesch-Kincaid Formula evaluates the number of syllables in words and the number of words in sentences. The assumption is that longer words and sentences make a text more complex. Although the majority of words in both texts are one-syllable words, their readability scores at the Common Core State Standards (CCSS) Complexity Bands of 11th grade and beyond. The average number of words in the sentences in the two texts—31 words and 27.5 words—suggests that much of the complexity of the texts comes from sentence length. The Dale-Chall Formula measures the percentage of words not found on a list of 3,000 words that are familiar to most fourth-grade readers. The complexity levels based on the Dale-Chall Formula are

reported at lower grade-level ranges for both texts. Note, though, that the percentage of unfamiliar words is much higher in *We Shall Fight on the Beaches*. There will be more words in this text that readers may not instantly or easily recognize for reading. The Degrees of Reading Powers® predict that on-grade-level readers in seventh or eighth grade should be able to read and understand *A Dog's Tale* with at least 80% comprehension at the end of the year. On-grade-level readers in ninth or tenth grade should be able to read and understand *We Shall Fight on the Beaches* with 90% comprehension at the end of the year. ATOS measures words per sentence and average grade level of words. The ATOS score for *A Dog's Tale* matches most of the other measures. The ATOS score of 9.3 for *We Shall Fight on the Beaches* just misses the range for CCSS 9-10, which is 9.67 – 12.01.

Table 1. Quantitative Features	*A Dog's Tale*	*We Shall Fight on the Beaches*
Flesch-Kincaid Formula measure of number of syllables in words; number of words in sentences	12.62 CCSS 11th-CCR	12.8 CCSS 11th-CCR
Average number of words in sentences[1]	31	27.5
Average characters per word[1]	4 (74% one-syllable)	4.3 (71% one-syllable)
Dale-Chall Formula based on 3,000 words easily understood by 80% of 4th graders	6.7 7th-8th	7.5 9th-10th
Percentage of unfamiliar words[2]	9%	15%
Degrees of Reading Power® measures student's comprehension using word length, sentence length, and word familiarity	60 CCSS 6-8	63 CCSS 9-10
ATOS measures words per sentence, average grade level of words	7.2 CCSS 6-8	9.3 CCSS 6-8

[1]Determined by the Flesch-Kincaid Formula. [2]Determined by the Dale-Chall Formula.

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Qualitative Features

Evaluating the qualitative features is more subjective than the evaluating the quantitative features. This evaluation requires an initial reading of the text and then careful consideration of the qualitative features such as those presented in Table 2 below. The structure and layout of the text, the overall language, the knowledge demands, and the level of purpose(s) or meaning(s) make a text less or more complex (NGA & CCSSO, 2010). Table 2 also presents questions that can guide consideration of the qualitative features. The more questions that are answered with "no," the greater the complexity.

Table 2. Qualitative Features	Questions to Ask About a Text
Structure/Layout	● Is there one storyline and one point of view? (narrative) ● Is there one main idea with sequentially stated supporting ideas and details? (informational) ● Is the organization of the text content consistent (e.g., no flashbacks or flash-forwards)? ● Is the structure or layout of the text easy to follow? ● Are there illustrations, graphs, or other visual supports?
Vocabulary/Language	● Is the syntax mostly simple sentence structures? ● Is the vocabulary familiar? ● Is the language straightforward or conversational? ● Are the meanings of new vocabulary words introduced or easily inferred? ● Is there limited use of literary or rhetorical devices?
Knowledge Demands	● Is the life experience (narrative) or subject (informational) common to most readers? ● Is the required knowledge common to most readers?
Meaning/Purpose	● Is the author's meaning or purpose straightforward and easily identified? ● Is there one meaning or purpose that is revealed early or stated explicitly?

Figure 1 provides an excerpt from Mark Twain's *A Dog's Tale* and Figure 2 provides an excerpt from Winston Churchill's *We Shall Fight on the Beaches*. These excerpts will be used to explore some of the qualitative features of the two texts that make the texts complex. These features can inform the instruction that will promote success in understanding the texts.

A Dog's Tale

A Dog's Tale originally appeared in the December 1903 issue of *Harper's Magazine* and was later reprinted in a pamphlet for The Anti-Vivisection Society. The quantitative evaluation of *A Dog's Tale* suggests that the text is appropriate for seventh- or eighth-grade readers. What about from a qualitative perspective? In evaluating the qualitative features of *A Dog's Tale*, the majority of questions in Table 2 would be answered "no," meaning this is a complex text. Below are a few examples of features that make this text complex. What does the reader need to know to deeply understand this text?

- *Syntax*

  This excerpt is found at the beginning of Chapter 1 in the three-chapter short story. The reader quickly sees that the sentence structure of this text is not mostly simple. The fifth sentence, which begins on the fifth line of the excerpt, has 91 words and four sentences joined by colons or semicolons.

A Dog's Tale
Mark Twain

My father was a St. Bernard, my mother was a collie, but I am a Presbyterian. This is what my mother told me, I do not know these nice distinctions myself. To me they are only fine large words meaning nothing. My mother had a fondness for such; she liked to say them, and see other dogs look surprised and envious, as wondering how she got so much education. But, indeed, it was not real education; it was only show: she got the words by listening in the dining-room and drawing-room when there was company, and by going with the children to Sunday-school and listening there; and whenever she heard a large word she said it over to herself many times, and so was able to keep it until there was a dogmatic gathering in the neighborhood, then she would get it off, and surprise and distress them all, from pocket-pup to mastiff, which rewarded her for all her trouble. If there was a stranger he was nearly sure to be suspicious, and when he got his breath again he would ask her what it meant. And she always told him. He was never expecting this but thought he would catch her; so when she told him, he was the one that looked ashamed, whereas he had thought it was going to be she. The others were always waiting for this, and glad of it and proud of her, for they knew what was going to happen, because they had had experience. When she told the meaning of a big word they were all so taken up with admiration that it never occurred to any dog to doubt if it was the right one; and that was natural, because, for one thing, she answered up so promptly that it seemed like a dictionary speaking, and for another thing, where could they find out whether it was right or not? for she was the only cultivated dog there was.

Figure 1. Excerpt from *A Dog's Tale* by Mark Twain. (Public Domain)

- *Vocabulary and Knowledge*

  Although the language is conversational, the reader may find the text difficult to understand because of long sentences and unfamiliar words. The 10 underlined words in Figure 1 are examples of words in the text that are not found in a core of 4,000 vocabulary words that account for about 90% of the words in most texts (Hiebert, 2012, 2013). That means, some seventh- and eighth-grade readers may not have had much experience with them and, in this text, the meanings of these words are not easily inferred. The reader with knowledge about breeds of dogs will better understand some of the underlined words. Will the reader understand how words such as *dogmatic* and *cultivated* add to the author's tone, and how words such as *envious*, *suspicious*, and *ashamed* contribute to the meaning of the story?

- *Literary or Rhetorical Devices*

  The opening sentence introduces the reader to the first-person narrator, who is a dog. Will the reader understand how this illustration of anthropomorphism helps to create the tone and mood in Chapter 1? Will the reader perceive how the tone and mood change in succeeding chapters and understand the effects of the changes? "It seemed like a dictionary speaking" is one of several figures of speech the narrator uses to describe her overly loquacious mother or her mother's erroneous but endearing use of language. Ultimately, will the reader understand the heartbreaking irony in the final chapter?

We Shall Fight on the Beaches

Winston Churchill delivered his speech *We Shall Fight on the Beaches* to the British House of Common not long after the Nazis invaded France. England was in imminent danger of being invaded. The quantitative measures are fairly consistent in determining that this text is appropriate for ninth- or tenth-grade readers. In evaluating the qualitative features of this text, the majority of questions in Table 2 would be answered "no," meaning this is a complex text. What does the reader need to know and be able to do to deeply understand this text?

- *Syntax*

  The excerpt in Figure 2 below contains the closing of Churchill's speech. The language is not straightforward or familiar. The sentences are long. The final sentence contain 98

words, which some readers may find them difficult to follow and understand without
repeated readings.

- *Vocabulary and Knowledge*

   The underlined words in the excerpt are examples of words that are not core vocabulary
   words (Hiebert, 2013). Some readers, especially struggling readers, may have had limited
   experience with these words and, in this text, the meanings of these words are not easily
   inferred. *Resolved* is a core vocabulary word although *resolve*, used in this text as a noun,
   is not. The words *rule* and *flag* have been asterisked in the excerpt because the meanings
   of these words in this text are not the most commonly used meanings. Knowledge of
   morphology, such as prefix *sub-*, may aid the reader in determining the meanings of
   words (e.g., *subjugate, surrender*). With knowledge of World War II and the dire events
   leading up to this speech, the reader most likely will be familiar with words, such as
   Gestapo and *Nazi*, and may be better able to predict the tenor of words, such as *odious*,
   menace, and *tyranny*.

We Shall Fight on the Beaches
Winston Churchill

I have, myself, full confidence that if all do their duty, if nothing is <u>neglected</u>, and if the best arrangements are made, as they are being made, we shall prove ourselves once more able to defend our island home, to ride out the storm of war, and to outlive the <u>menace</u> of <u>tyranny</u>, if necessary for years, if necessary alone. At any rate, that is what we are going to try to do. That is the <u>resolve</u> of His Majesty's Government – every man of them. That is the will of Parliament and the nation. The British Empire and the French Republic, linked together in their cause and in their need, will defend to the death their native soil, aiding each other like good <u>comrades</u> to the <u>utmost</u> of their strength. Even though large <u>tracts</u> of Europe and many old and famous States have fallen or may fall into the grip of the <u>Gestapo</u> and all the <u>odious</u> <u>apparatus</u> of <u>Nazi</u> rule*, we shall not flag* or fail. We shall go on to the end. We shall fight in France, we shall fight on the seas and oceans, we shall fight with growing confidence and growing strength in the air, we shall defend our island, whatever the cost may be. We shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we shall never <u>surrender</u>, and if, which I do not for a moment believe, this island or a large part of it were <u>subjugated</u> and <u>starving</u>, then our Empire beyond the seas, armed and guarded by the British Fleet, would carry on the struggle, until, in God's good time, the New World, with all its power and might, steps forth to the rescue and the <u>liberation</u> of the old.

Figure 2. Excerpt from *We Shall Fight on the Beaches* by Winston Churchill.

- *Literary or Rhetorical Devices*

   Throughout the text, the author uses metonymy, the substitution of the name of a thing with attributes of that thing. Will the reader understand the meanings and the effects of metonymic phrases, such as *our island home*, *native soil*, *strength in the air*, *the New World*, and *the old*? Lastly, knowing rhetorical elements of persuasive speech (e.g., repetition, inclusive pronouns) will support the reader's understanding of the author's purpose and how the author's hopes to achieve that purpose.

The Reader, Task, and Scaffolding Considerations

The third part of the text complexity evaluation deals with the considerations about the reader, the task, and the scaffolding as presented below in Table 3 (NGA & CCSSO, 2010). What does the reader bring to the task in terms of reading skills, cognitive capabilities, and reader traits? What is the purpose of reading the text, and what task will the reader be asked to complete? The answers to these questions will determine the kinds and levels of scaffolding the reader might need to deeply read and understand the text (Reynolds & Goodwin, 2016; Shanahan, 2013).

Table 3. Reader, Task, and Scaffolding Considerations		
The Reader	**The Task**	**The Scaffolding**
Reading Skills ● Word recognition skills ● Fluency ● Academic language (vocabulary, non-literal language, syntactic awareness) ● Knowledge/experience ● Inference-making skills Cognitive Capabilities ● Attention ● Reasoning skills ● Working memory Reader Traits ● Motivation ● Engagement ● Maturity level ● Self-resiliency ● Stamina	Purpose ● Pleasure reading ● Practice ● Instruction ● Close reading Tasks ● Whole group discussion ● Peer-to-peer discussion ● Finding evidence to support answers to questions orally ● Answering questions in writing using evidence ● Oral summary ● Written summary	● Provide necessary background information ● Briefly connect prior knowledge ● Use visual aids ● Teach key vocabulary ● Use accessible definitions ● Teach word-learning strategies ● Teach reading strategies and skills related to the text ● Read and reread text before figuring out the meaning ● Reread sections with attention to punctuation ● Ask text-dependent questions ● Stop and summarize ● Use graphic organizers to organize thinking while reading ● Create friendly competition ● Use incentives

What Do Students Need to Know to Navigate Complex Text?

Beyond accurate and fluent reading, knowledge of the world supports deep comprehension of complex texts (Hirsch, 2003). Knowledge is attained through experiences and by reading widely. Two other important underpinnings for navigating complex text are vocabulary and syntax (Hiebert, 2014).

To comprehend a text well, the reader must know the meanings of 95% of the words in the text (Carver, 1994). Both breadth and depth of vocabulary are important (Anderson & Freebody, 1981). Breadth is the number of words a person knows, and depth is knowledge about words beyond a common definition (e.g., multiple meanings, synonymy, figurative language, connotation, precision, grammatical functions). Breadth of vocabulary is increased through direct instruction of words and their meanings, word-learning strategies, and wide reading. Depth of vocabulary is increased through direct instruction and ample experiences in texts.

Text readability analyzers such as those demonstrated earlier in this paper use sentence length as part of the determination of a text's complexity. Long sentences are often complex sentences that are arranged with multiple phrases or clauses. Not only does syntax predict the complexity of a text, recent research suggests it can predict a reader's text comprehension (Poulsen & Gravgaard, 2016). Knowing types of sentences, conjunctions, and punctuation such as commas, colons, and semicolons can help the reader understand **how** a sentence is long. Knowing the functions of words, phrases, and clauses can help the reader understand **why** a sentence is long and understand the overall syntax in a complex text.

What Instruction Helps Students Navigate Complex Text?

Explicit and systematic instruction of grammar and syntax as well as text elements and structures provides students with skills that aid deep reading of complex texts. The qualitative evaluation will inform the most appropriate instruction for a specific text--syntax, anthropomorphism, irony, metonymy, persuasive techniques.

Instruction focused on increasing vocabulary is arguably one of the most impactful across texts (Carver, 1994; Hiebert, 2012). An advantage of word-learning strategies such as morphology, appositives, and context clues is they help "teach" the massive number of words a reader needs to understand complex texts that cannot be learned through direct instruction alone (Nagy &

Anderson, 1994). The word-learning strategy that has the highest yield is morphology, which is the study of Latin- and Greek-based prefixes, roots, suffixes, and combining forms. Teaching relatively few word parts unlocks the meanings of hundreds of thousands of words and greatly increases the breadth of a reader's vocabulary (Henry, in press).

For example, the words *subjugated* and *surrender* in the Figure 2 text share the prefix *sub-* meaning *under*. To subjugate is *to bring under control.* To surrender is *to cause to be under another's authority*. The prefix *sub-* in the word *surrender* changes its spelling to match the initial letter of the root *render*. This is done for euphony, to make the word sound better and easier to pronounce. This prefix and its alternate spellings are found in hundreds and hundreds of words. The Figure 1 and 2 texts contain words with suffix *-ous* meaning *full of* (e.g., *envious, suspicious, famous*). There are hundreds and hundreds of words with this word part. Suffix *-ous* is an adjective-forming suffix that is added to the end of either a noun or a verb. The suffix changes the function of the root word, which increases the reader's knowledge about the depth of words.

Summary

Navigating complex text is critical for success in college, career, and adult life. The selection of complex texts involves a tripartite evaluation of text features that are considered in concert with instructional goals and student needs. Understanding **how** a worthy text is complex identifies it as a potential text. Understanding **why** the text is complex clarifies what students need to know and be able to do to deeply understand the text, which informs appropriate instruction. Understanding **for whom** a particular task is intended guides the scaffolding that will support success in navigating the text. In short, finding the right complex text that is delivered with the right instruction and scaffolding will improve students' ability to analyze and comprehend increasingly complex text, leading to greater proficiency and academic success, as well as the economic opportunities that follow.

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