

## **The Implementation of the TExT\* Accessibility Model Within the Seeds of Science • Roots of Reading Texts**

### **•Why the 1,000 most-frequent words and any vowel pattern in a monosyllabic word?**

Analyses of tests (both state standards-based and norm-referenced) have shown that typical third-grade reading assumes automaticity with the 1,000 most-frequent words as well as the any vowel pattern in a monosyllabic word. The Seeds • Roots program has been created to support automaticity with this curriculum. Therefore, the goal was to provide texts where at least 97% of the unique or different words fit this curriculum.

### **•Why 97% (or more) of the vocabulary within the target curriculum?**

A rule of thumb among reading educators (dating back to the work of Emmett Betts in 1946) is that students can recognize around 98% of the words when they are reading independently and 95% in texts that are scaffolded with instruction. The Seeds • Roots texts follow and build on inquiry-based experiences. They are also introduced within instructional contexts. However, the intention is for students to read these texts, not for the teachers to use the texts for read-alouds. The context could be described as *scaffolded independent* reading. We reasoned that, for this context, a standard where 97% of the words were within the curriculum was appropriate.

### **•What characterizes the hard words?**

The 3 out of every 100 running words that are outside the curriculum are viewed to be potentially hard words for developing readers. In a content area such as science, the hard words often represent unknown concepts rather than being synonyms for known concepts (as is often the case in literature). By limiting the number of hard words to 3, writers needed to choose hard words that are central to the science content.

Further, when words pertain to complex, new concepts such as *adaptation* and *erosion*, words should be repeated within and across texts. The Seeds • Roots texts with a shared vocabulary across a unit of 9 texts, permits developing readers to become fluent with a vocabulary that science researchers and educators have deemed central to a content area.

### **•Why are some hard words singletons?**

While automaticity with critical science vocabulary was a goal, we also recognized that writers need to bring in words that may not be as central to the content but are useful for illustrations or examples. The word *chocolate* may not be central to understanding the chemistry of mixtures but it pertains to a known and interesting concept for students when the phrase *hot chocolate* is used to illustrate mixtures in the kitchen. A general guideline in the creation of the texts was to keep the percentage of single-appearing hard words (i.e., words that fall outside the linguistic curriculum) to about 1% (i.e., 1 out of every 100 running words of text).

\*TExT stands for Text Elements by Task (Hiebert, 2002)

An Illustration Of The Text Features Of A Children’s Book (Available On The Trade Market) On A Similar Concept And A Seeds • Roots Text On A Shared Topic: Oil Spills

	Unique/Total Words	New, Unique words per 100	Hard words per 100	Hard words per 100 that are NOT repeated	Hard words in Seeds • Roots theme vocabulary
<i>Oil Spill</i> (Berger, 1994)	347/957	36	7	6	
<i>Black Tide</i> (Parizeau, 2004)	290/1092	27	3	1	29%

Excerpts from a Children’s Book and a Seeds • Roots Text on a Shared Topic

<i>Oil Spill</i> (Berger, 1994)	The sticky oil soon covered 11,000 square miles of ocean water. That is an area as big as the state of Maryland. It damaged about 1,250 miles of Alaska’s coastline. That is longer than the entire Atlantic coast of the United States. The oil stuck to the feathers of many ducks, geese, and other seabirds.
<i>Black Tide</i> (Parizeau, 2004)	<b>Shoreline Disaster</b> COAST — The beaches of Spain are black with oil. The oil was not stopped before it reached shore. There is oil in the seaweed and oil in the sand. Rocks are covered with it. Animals are covered with it. Everywhere you look, waves are carrying more oil to the beach.

**Text Accessibility And The Seeds of Science • Roots of Reading Texts**

**Why is a model of text accessibility critical for science texts?**

Substantial percentages of American students can decode the words in texts. However, they are sufficiently slow at this task that their comprehension suffers. From the perspective of the Text Elements by Task (TEXT) model, beginning and struggling readers can benefit from texts where the percentages of high-frequency and easily decodable words are high *and* where the content develops and extends critical areas of background knowledge. Such accessible texts permit students the opportunity to become more fluent and develop science schemata—both strategies that support lifelong literacy.

## **What is the TExT model?**

The model describes the skills needed to read words in a text fluently. Text elements other than the ones of focus undoubtedly influence comprehension. However, without particular levels of fluency with particular content, students will not be able to be responsible for the reading of particular texts. The model describes two features of the word-level features: (a) cognitive load and (b) linguistic curriculum.

Cognitive load refers to the number of different words within a text. In particular, it provides an index of the number of different words within a text that fall outside a particular linguistic curriculum. This number of unique words outside the target linguistic curriculum indicates those words to which developing readers may need to stop and consciously attend, stopping the flow of their comprehension.

The linguistic curriculum describes the high-frequency words and vowel patterns in monosyllabic and multisyllabic words with which students need to be automatic or fluent at particular levels. For example, 107 words account for approximately half of the total words in texts—even at the college level. Unless students are fluent with this group of words early on, they will struggle with most texts. To become automatic readers, students also need to generalize knowledge of common and consistent vowel patterns in words and in syllables. To deal with the thousands of words that are in texts (and not among the 100 or even 1,000 most-frequent words), students need to generalize their understanding of letter-sound correspondences.