The Basic Vocabulary to be Taught

The basic vocabulary to be taught in the project is a corpus of the 5,586 most frequent words developed by Hiebert (2005) and referred to as the Word Zones™ corpus. Hiebert developed the Word Zones™ corpus from the frequency count presented in the *Educators Word Frequency Guide* (Zeno, Ivens, Millard, & Duvvuri, 1995) by grouping words into four frequency zones and identifying each zone as appropriate for a grade level. Zone 1 includes words occurring 300 or more times per million. It contains 310 words and is designated for Grade 1. Zone 2 includes words occurring from 100 to 299 times per million. It contains 620 words and is designated for Grade 2. Zone 3 includes words occurring from 30 to 99 times per million. It contains 1,676 words and is designated for Grade 3. Zone 4 includes words occurring from 10 to 29 times per million. It contains 2980 words and is designated for Grade 4. To reduce the number of elements needing to be taught and in recognition of the fact that a student who knows a base word can easily recognize its common inflected forms, Hiebert grouped these 5,586 words into word families, defined here as a base word plus its common inflections. Doing so produced ~4,000 word families, with Zone 1 containing ~300 families, Zone 2 ~500 families, Zone 3 ~1,000 families, and Zone 4 ~2,000 families. These 4,000 word families make up over 90 % of the words occurring in intermediate grade texts (Hiebert, 2005). The following four versions of a passage from an intermediate-grade text (Giblin, 1997) show the effects of students knowing some or all of these first 4,000 word families.

Here is what the passage would look like to a student who could read only Zone 1 words:

Could it be an _____? The year before, _____ had seen one for the first time when his mother took him to a _____ _____ in ____ Myer, _____. He had _____, enthralled, as the _____ ____ a _____ _____ by _____ _____ on the _____ of a _____ that was _____ on the _____. Now _____ an _____ was right here in _____, and about to ___ over his house.

Not _____ to miss a thing, _____ _____ the _____ and _____ up the _____ ____ of the house to its ____. From there he had a good ____ of the _____ _____, _____ languidly ____ the Lindbergh place. And in the ___, _____ ever _____, he saw the _____.

Here is what it would look like to a student who could read the words in Zones 1 and 2:

Could it be an _____? The year before, _____ had seen one for the first time when his mother took him to a _____ _____ in ____ Myer, _____. He had watched, enthralled, as the _____ gave a _____ _____ by _____ _____ on the _____ of a _____ that was _____ on the ground. Now maybe an _____ was right here in _____, and about to ___ over his house.

Not _____ to miss a thing, _____ opened the window and _____ up the _____ ____ of the house to its ____. From there he had a good view of the

_____ River, _____ languidly past the Lindbergh place. And in the sky, coming ever _____, he saw the _____.

Here is what it would look like to a student who could read the words in Zones 1-3:

Could it be an airplane? The year before, Charles had seen one for the first time when his mother took him to a flying _____ in ____ Myer, Virginia. He had watched, enthralled, as the _____ gave a _____ _____ by _____ oranges on the _____ of a _____ that was _____ on the ground. Now maybe an airplane was right here in _____, and about to fly over his house.

Not _____ to miss a thing, Charles opened the window and climbed up the _____ roof of the house to its ____. From there he had a good view of the _____ River, _____ languidly past the Lindbergh place. And in the sky, coming ever closer, he saw the plane.

Finally, if a student could read all 4,000 words in Zones 1-4, he or she would be able to read all the words in the following passage except those in grey text.

Could it be an airplane? The year before, Charles had seen one for the first time when his mother took him to a flying exhibition in Fort Myer, Virginia. He had watched, enthralled, as the pilot gave a bombing demonstration by dropping oranges on the outline of a battleship that was traced on the ground. Now maybe an airplane was right here in Minnesota, and about to fly over his house.

Not wanting to miss a thing, Charles opened the window and climbed up the sloping roof of the house to its peak. From there he had a good view of the Mississippi River, flowing languidly past the Lindbergh place. And in the sky, coming ever closer, he saw the plane.

As this demonstration dramatically shows, not knowing these 4,000 words is tremendously debilitating, while knowing them puts a student in an excellent position to understand an intermediate-grade text.

A Validated Approach to Teaching a Basic Vocabulary

The instructional approach used in this project is based on three lines of research: research on shared book reading, research on what constitutes relatively powerful vocabulary instruction, and research on a particularly powerful form of vocabulary instruction referred to as "robust instruction."

Shared Book Reading. While simply reading to children has been found to be somewhat effective in promoting vocabulary growth, shared book reading—a procedure in which the teacher directly focuses on and discusses words that come up in the reading—has been shown to be considerably more effective (Beck & McKeown, in press; Biemiller, 2006; Biemiller &

Boote, 2006; Zevenbergen & Whitehurst, 2003). Shared book reading is designed for preschool or primary-grade students, and it is particularly useful for students who come to school with relatively small vocabularies and therefore need special assistance to catch up with their peers. Some characteristics of effective shared book reading taken from Graves (2006) are shown below.

The children play active roles.

- The reading selection is read several times.
- The reader focuses the children's attention directly on words.
- The selection is read fluently using an animated and lively reading style.
- The selections need to be interesting and enjoyable and stretch children's thinking.
- The words need to be somewhat challenging, but words children are likely to encounter in the future.

Research on What Constitutes Relatively Powerful Vocabulary Instruction. While almost any sort of vocabulary instruction produces some gains in word knowledge (Petty, Herold, & Stoll, 1967), instruction that includes at least two components—using the words to be taught in context and defining them—has been shown to be markedly superior to instruction that includes only one of these components (Graves, 2006; Stahl & Fairbanks, 1986; Stahl & Nagy, 2006).

Research on Robust Vocabulary Instruction. While instruction that includes presenting words in context and defining them has been shown to be a relatively powerful sort of vocabulary instruction, robust vocabulary instruction has been shown to be even more powerful (Graves, 2006; Stahl & Nagy, 2006). Robust vocabulary instruction is a procedure developed by Beck and McKeown and validated by them and their colleagues in a number of studies (e.g., Beck & McKeown, in press; Beck, Perfetti, & McKeown, 1982).

More Specifics on the Proposed Project

At the present time, we know of no viable, long-term efforts to reduce the vocabulary gap between middle-class students and many linguistically less-advantaged students. Several components of the problem have made it particularly difficult to solve. First, the gap is huge, constituting thousands of words (Chall & Jacobs, 2003; Graves, 2006; Hart & Risley, 1995, 2003). Second, although words tend to be learned in the same order, different students have vocabularies of radically different sizes, making it very difficult to determine what words to teach to a particular group of students (Biemiller, 2004; Biemiller & Slonim, 2001; Hiebert, 2005). Third, given the number of words that need to be taught and the differential word knowledge of students in any particular setting, the task is virtually impossible for an individual teacher to accomplish. The project attempts to solve all three of these problems by employing a sophisticated computer program to (1) diagnose each student's word knowledge, (2) select appropriate words for the student to learn, and (3) provide highly motivating, individualized instruction at each student's level and pace.