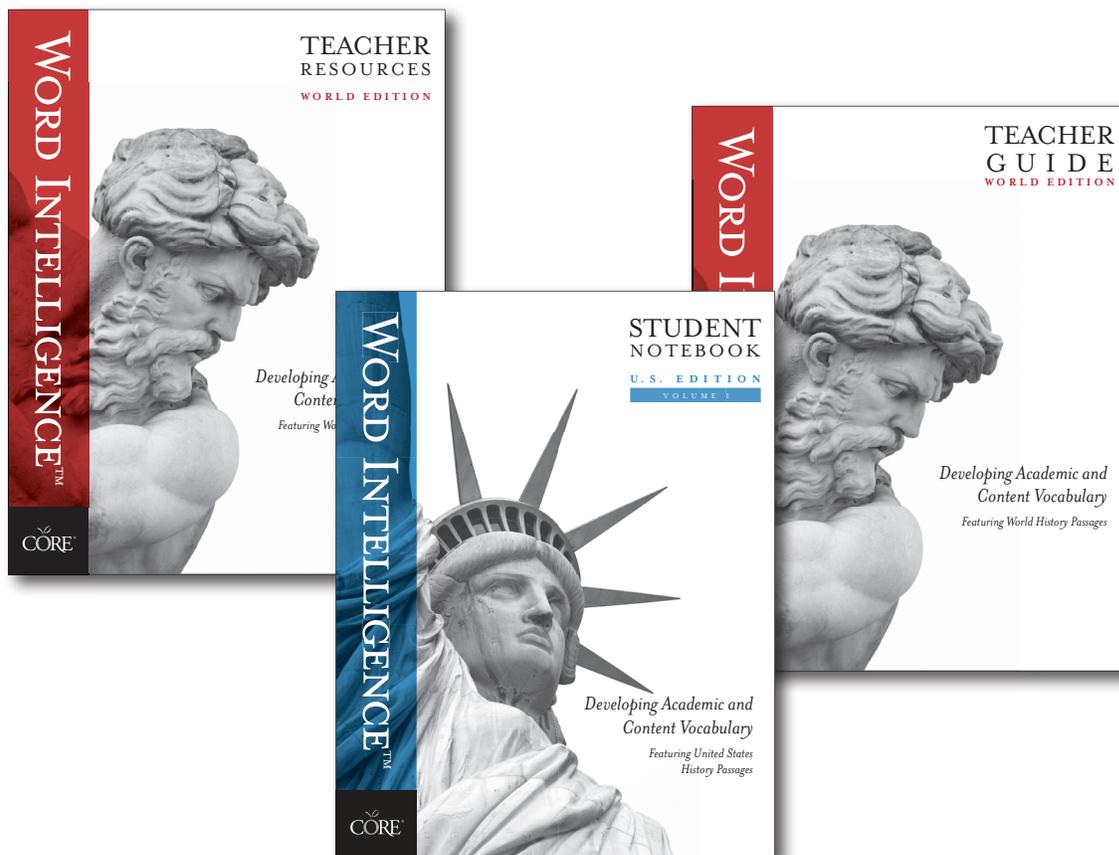


WORD INTELLIGENCE™



RESEARCH FINDINGS

WORD INTELLIGENCE™ Features

Features of *Word Intelligence* are present in every unit and include the following design elements for the most robust, yet easily deliverable middle school vocabulary intervention:

- Direct and explicit teaching of specific word-learning strategies that students revisit and reuse throughout the curriculum
- Brief, engaging texts that utilize a social studies framework
- Content-area and domain-specific words taught deeply and presented in multiple contexts with ample opportunities for practice
- Instruction in selected reading comprehension strategies
- Dynamic and engaging instruction that allows for productive language opportunities and the development of critical thinking skills through whole-group learning, partner work, and written and oral responses
- Formative assessments for monitoring student performance
- Primary language supports for Spanish-speaking students in the form of mini-lessons

The Need for Intensified Vocabulary Instruction

Current reports on the proficiency of adolescent readers paint a troublesome portrait of the reading abilities of students. According to the National Assessment of Educational Progress, the average percentage of students meeting proficiency standards in grade 8 is less than 50% for all states (NAEP, 2009). Other reports suggest that at least 70% of middle school students need some sort of reading remediation (Biancarosa & Snow, 2006; White & Kim, 2008). Further examination of these statistics shows that students in middle schools demonstrate good foundational skills for word reading but lack deep understanding of what is read due to limited vocabulary and insufficient background knowledge.

Two decades of research have spotlighted vocabulary knowledge as the critical underpinning for the comprehension of both spoken and written language, with general vocabulary being the single best predictor of reading comprehension (Beck, McKeown, & Kucan 2002; Christ & Wang, 2010; White & Kim, 2008). Vocabulary development is anchored in the early learning years when frequent conversations with adults and wide reading through shared read-alouds and independent reading produce the greatest vocabulary learning (Hart & Risley, 1995). However, for many children, like those from impoverished backgrounds, English learners, and those with particular academic challenges, such conversations and reading opportunities can be rare (Christ & Wang, 2010; White & Kim, 2008). The lack of early vocabulary knowledge, further exacerbated by limited opportunities to engage with language, creates significant obstacles for students as they move into the higher grades (Kelley et al., 2010). These children have underdeveloped vocabulary, leading to disinterest in reading which, in turn, results in a lack of background knowledge. Thus, as the cognitive demands increase due to text complexity and increasingly specialized vocabulary, early failure accelerates exponentially as students move through the education system. In upper elementary school through high school, the instructional focus shifts from learning to read to reading to learn. The new Common Core State Standards highlight this shift, with an intensified focus on informational text in all content areas (National Governors Association, 2010). When limited vocabulary skills compromise students' abilities to comprehend what they read, a vocabulary deficit ensues.

When students with vocabulary deficits reach middle school, educators must react with immediacy and instructional precision to enable these students to attain future academic success. It becomes incumbent upon schools to implement instruction that focuses on intense vocabulary and background knowledge development to ensure students have access to the curriculum. No longer are conversations and wide reading sufficient to grow students' vocabularies. Middle school students require dynamic, explicit, systematic instruction in word meanings to bridge their vocabulary gaps.

Applying Research to Instructional Practices

Currently, few districts have many options for addressing the needs of middle school students with vocabulary deficits. *Word Intelligence* fills a critical curricular need at the middle school level by addressing the vocabulary challenges of struggling middle school readers, both English proficient and English learners. By applying research-tested methods of vocabulary instruction, *Word Intelligence* shifts the performance trajectories of students. It does so by emphasizing the teaching of specific words and word-learning strategies through an active and engaging approach that includes a focus on rich content.

Research overwhelmingly details the components necessary for effective vocabulary instruction (Beck, McKeown, & Kucan, 2002; Christ & Wang, 2010; Kelley et al., 2010; White & Kim, 2008). These include explicit teaching with student-friendly definitions, contextualized examples of target vocabulary words, multiple and repeated exposures to the target words, and explicit checking for understanding. The *Word Intelligence* supplemental curriculum encompasses these elements of instruction, addresses students' limited vocabulary knowledge, and strives to bring students' skills to a point commensurate with their grade-level peers.

WORD INTELLIGENCE™ Research Findings

Word Intelligence is the outcome of four years of applied, classroom-based research. The research and development reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grants R305B070688 to California State University, Long Beach, and R305B070016 to Stanford University, "Content-rich vocabulary development to improve reading achievement of struggling adolescent readers." Data analysis was provided by SRI International of Menlo Park, California. The opinions expressed here are those of the authors and do not represent views of the Institute or the U.S. Department of Education.

During the school years of 2007 through 2011, middle school teachers taught each component of *Word Intelligence*. In the spring of each year, students were assessed on researcher-developed and standardized measures of vocabulary and comprehension to ensure the program's efficacy for 7th and 8th grade students with limited vocabulary and background knowledge. The following findings represent the 2010–2011 implementation.

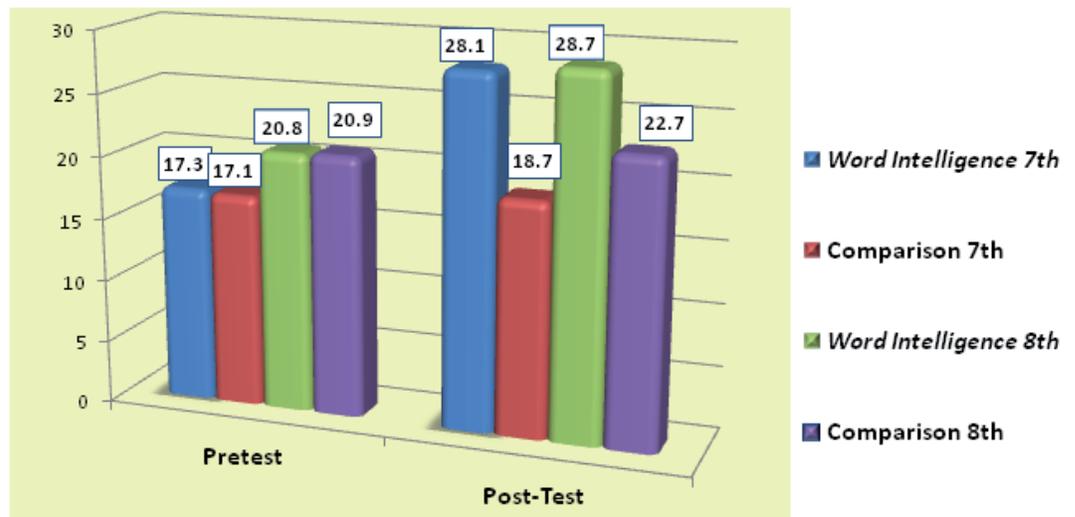
Growth in Content-Specific Vocabulary

Students who were taught with *Word Intelligence* showed greater achievement on researcher-developed, curriculum-based measures of vocabulary than students who received typical classroom instruction. For 7th grade, students in the *Word Intelligence* group improved from a mean score of 17.3 words identified correctly at pretest to a mean score of 28.1 words identified correctly at post-test (out of 50 possible words). Students in the comparison group identified 17.1 words at pretest versus 18.7 words at post-test.

Likewise, 8th grade students in the *Word Intelligence* group showed mean score gains from 20.8 words

identified correctly at pretest to 28.7 words identified at post-test, whereas students in the comparison group increased from 20.9 to 22.7 mean words identified. Gains made by students in the *Word Intelligence* group are statistically significant.

Growth on Researcher-Developed Vocabulary Test

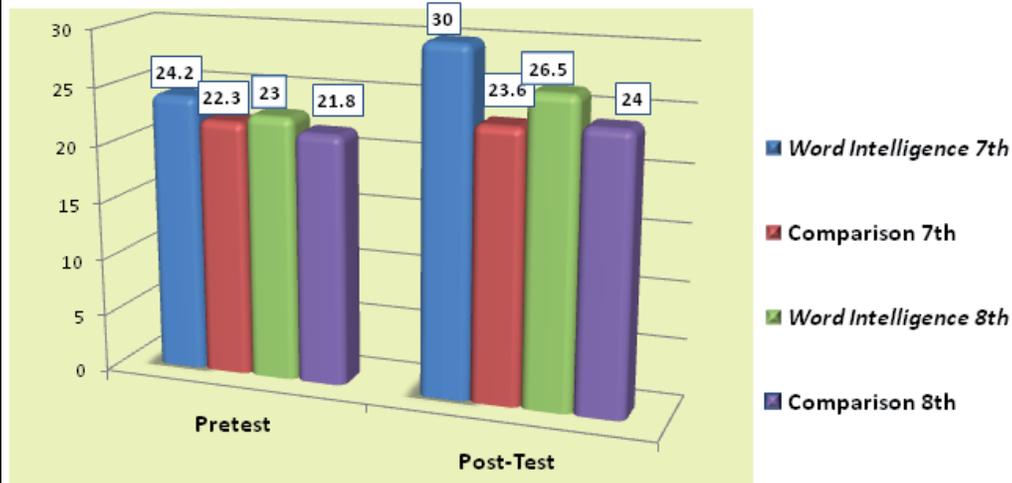


Overall for this measure of content specific vocabulary, 7th graders using *Word Intelligence* experienced a 62% increase in their mean score, and 8th graders demonstrated a 38% increase.

Growth in Depth of Vocabulary Knowledge

A second vocabulary measure that assesses student knowledge of multiple word meanings and precise word usage was administered to all students. Students in 7th and 8th grade *Word Intelligence* groups demonstrated greater, statistically

Growth on Researcher-Developed Depth of Vocabulary Knowledge Test



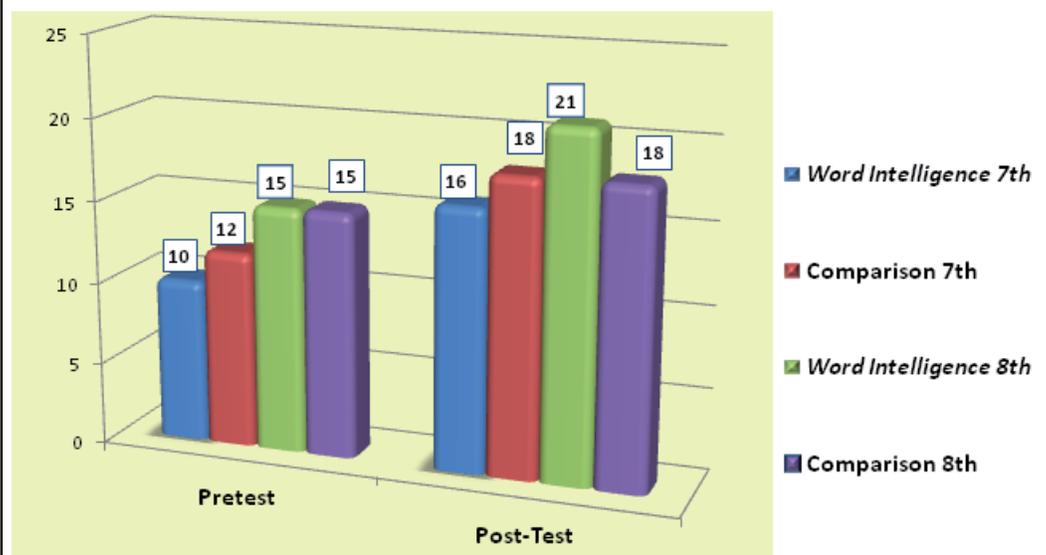
Overall for this measure of depth of vocabulary knowledge, 7th graders using *Word Intelligence* experienced a 24% increase in their mean score, and 8th graders experienced a 15% increase.

significant gains over their peers in a comparison condition on this measure of vocabulary, while 7th grade students increased from a mean score of 24.2 to 30.0 (out of 39 points). The mean scores of students in comparison classes increased from 22.3 to 23.6. In 8th grade, students in the *Word Intelligence* classes improved from a mean score of 23.0 to 26.5 (out of 45 points), while students in the comparison classes showed a mean increase from 21.8 to 24.0.

Growth in a Standardized Subtest of Vocabulary

The vocabulary subtest of the Gates-MacGinitie Reading Tests (GMRT) was administered as a standardized measure of reading vocabulary. Grade 7 students who received *Word Intelligence* instruction scored in the 10th percentile at pretest and in the 16th percentile at post-test. For those students in the comparison condition, scores were in the 12th percentile at pretest and 18th percentile at post-test. Grade 8 students who received *Word Intelligence* instruction scored in the 15th percentile at pretest and the 21st percentile at post-test. Students in 8th grade in the comparison condition scored in the 15th percentile at pretest and in the 18th percentile at post-test. While students displayed growth trends in the right direction, there were no significant differences on this measure at either grade level.

Growth on Standardized Subtest of Vocabulary (GMRT)



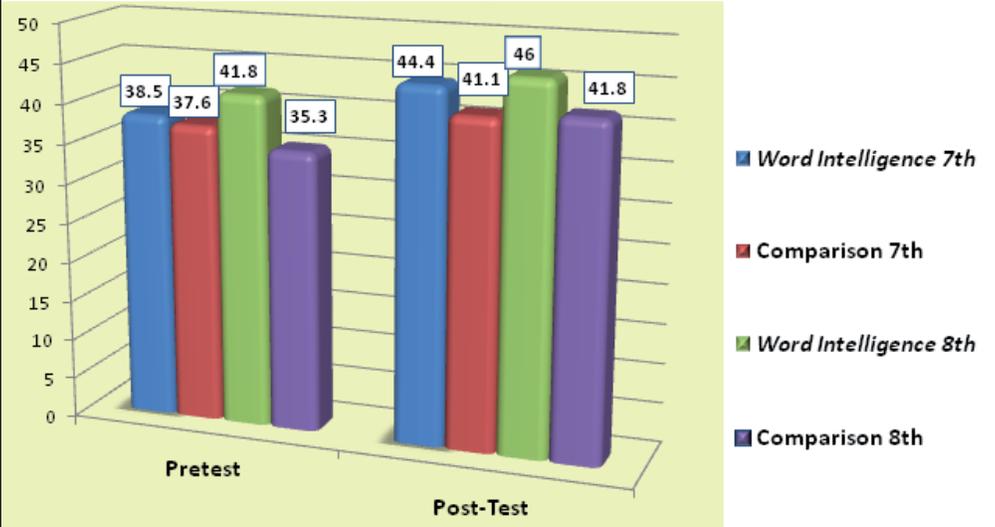
Overall for the vocabulary subtest of the GMRT, 7th grade students who participated in *Word Intelligence* instruction demonstrated a 60% increase in percentile rankings, while 8th grade students who had *Word Intelligence* instruction demonstrated a 40% increase.

WORD INTELLIGENCE™ Research Findings

Growth in Reading Comprehension

On a researcher-developed measure of text comprehension, students who were taught with *Word Intelligence* in 7th grade outperformed their peers in the comparison group. Students who received instruction in *Word Intelligence* had a mean score of 38.5 relating to passage understanding at pretest and 44.4 at post-test (out of 60 possible). Students in the comparison group had a mean of 37.6 correct responses at pretest and 41.1 at post-test. These findings are statistically significant. In 8th grade, students taught with *Word Intelligence* had mean scores of 41.8 at pretest and 46.0 at post-test. The mean scores of students in the comparison classes increased from 35.3 to 41.8. Grade 8 students demonstrated growth over time, yet these growth trends are not statistically significant.

Growth on Researcher-Developed Reading Comprehension Test

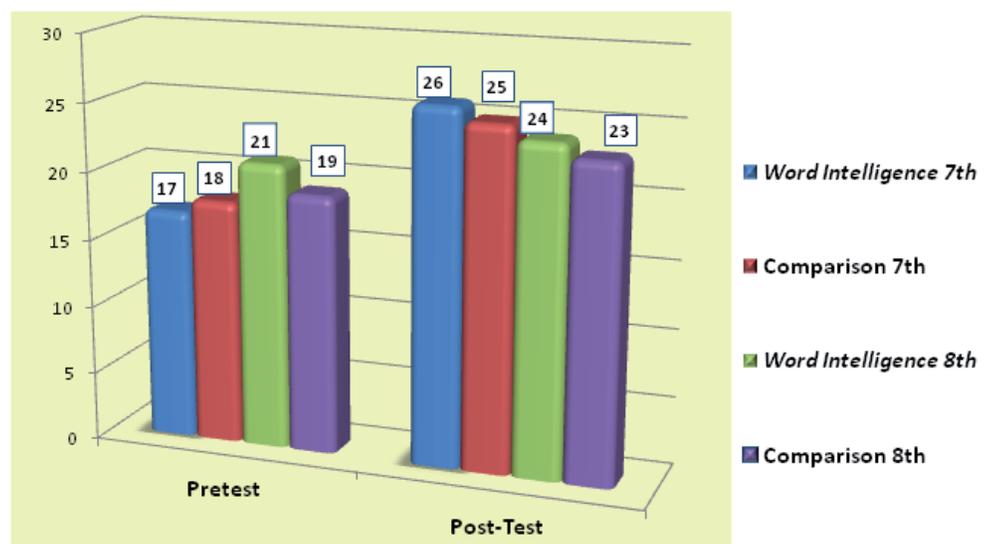


Overall for this researcher-developed measure of reading comprehension, students in 7th grade using *Word Intelligence* experienced a 15% increase in their mean score. Students in 8th grade using *Word Intelligence* showed a 10% increase in their mean score.

Growth in a Standardized Subtest of Reading Comprehension

The comprehension subtest of the Gates-MacGinitie Reading Tests (GMRT) was administered as a standardized measure of reading comprehension. The 7th grade students who received *Word Intelligence* instruction performed at the 17th percentile at pretest and the 26th percentile at post-test. Students in comparison classes performed at the 18th percentile at pretest and the 25th percentile at post-test. The 8th grade students in the *Word Intelligence* classes scored at the 21st percentile at pretest and the 24th percentile at post-test. Students in comparison classes scored at the 19th percentile at pretest and the 23rd percentile at post-test. These differences are not statistically significant.

Growth on Standardized Subtest of Comprehension (GMRT)



Overall for the standardized comprehension subtest measure of the GMRT, students in 7th grade using *Word Intelligence* demonstrated a 52% increase in percentile rankings, while 8th grade students showed a 14% increase.

Research Conclusions

Research outcomes show that 7th and 8th grade students who were taught with *Word Intelligence* were able to demonstrate significant gains on researcher-developed measures of vocabulary learning in comparison to students who received typical classroom instruction. Students in 7th grade who used *Word Intelligence* also showed significant growth on researcher-developed measures of reading comprehension. Used as a supplemental intervention to support a core language-arts curriculum, *Word Intelligence* bolsters students' general vocabulary knowledge as well as domain-specific vocabulary knowledge, both of which are essential for comprehending content-area grade-level texts.

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