



WORDLY WISE *i3000*[™]

Research-Based Vocabulary Instruction: A Focus on Online Instruction

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Overview

Isabel Beck, Margaret McKeown, and Linda Kucan, leaders in the field of vocabulary instruction and authors of *Bringing Words to Life: Robust Vocabulary Instruction*, reflected on the importance of vocabulary in people’s lives in the second edition of their landmark text:

A rich vocabulary supports learning about the world, encountering new ideas, enjoying the beauty of language. A rich vocabulary enhances an interview, allows one to see the humor in wordplay, shores up what an individual wants to say, and, especially, wants to write. It is clear that a large and rich vocabulary is the hallmark of an educated individual. Indeed, a large vocabulary repertoire facilitates becoming an educated person to the extent that vocabulary knowledge is strongly related to reading proficiency in particular and school achievement in general. (2013, p. 1)

Unfortunately, a profound difference in vocabulary knowledge exists among students with diverse learning needs and socioeconomic backgrounds (e.g., Beck et al., 2013; Hart & Risley, 1995, 2003; Kuder, 2017; Nelson, Dole, Hosp, & Hosp, 2015; Spies & Dema, 2014). Given the importance of vocabulary development for all students and the gaps in vocabulary knowledge evidenced by many, it is now widely accepted that vocabulary development become an essential ingredient of academic and vocational planning efforts. With careful planning and curricular support, teachers can provide the kinds of robust vocabulary instruction needed to improve the vocabulary and corresponding comprehension skills of all students across the primary, intermediate, and high school grades.

Wordly Wise i3000[™] is one such vocabulary program designed to meet the needs of students through online, sequential, and systematic vocabulary instruction. This 21st-century, online instructional program provides the effective research-based and grade-appropriate lessons for direct instruction in vocabulary necessary for balanced classroom and school-wide vocabulary development. Rather than plan and develop lessons with seamless supporting activities within and across grades, teachers can invite students to participate in lessons and oversee their work in real time; they can also support and differentiate student learning across Levels 2–12.

Figure 1 shows important features of the research-based program *Wordly Wise i3000*[™]. These features are discussed in this research brief.

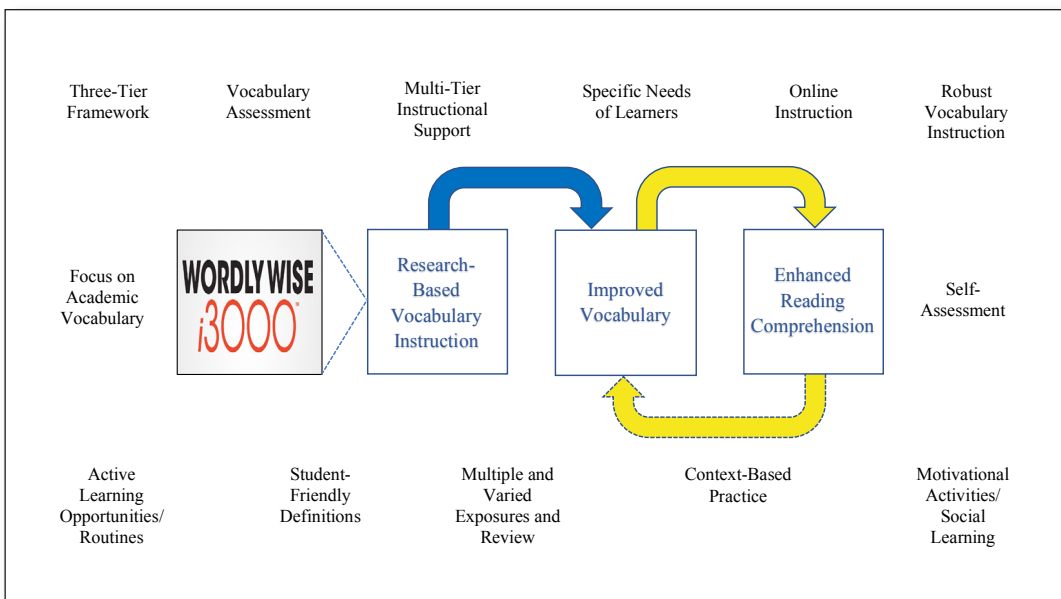


Figure 1 Important features of *Wordly Wise i3000™*

Importance of Reading

The value of learning to read cannot be underestimated (Flaum-Horvath, Marchand-Martella, Martella, & Kauppi, 2017); in fact, it is the most important skill students can learn in school, serving as the cornerstone of all other academic subject areas (Marchand-Martella, Martella, Modderman, Petersen, & Pan, 2013). In April 2000, the National Reading Panel issued a report stemming from a Congressional mandate aimed to help educators identify key skills and methods needed to bolster reading achievement for students in Grades K–3 (Armbruster, Lehr, & Osborn, 2006; National Institute of Child Health and Human Development [NICHD], 2000). Five areas of reading instruction surfaced as critical to teaching these students: (1) phonemic awareness, (2) phonics, (3) fluency, (4) vocabulary, and (5) text comprehension. Two areas in particular—vocabulary and text comprehension—were considered key aspects of reading to gather information (“reading to learn”). All readers, whether they are beginners or advanced learners, “must understand that the ultimate goal of reading is comprehension” (Armbruster et al., 2006, p. 46). The National Reading Panel reported implications for reading instruction, including the need for direct instruction of vocabulary words, repetition and multiple exposures of these words, learning in rich contexts, and active learning opportunities, among others. Key features of robust vocabulary instruction are discussed further starting on page 6.



Relationship Between Vocabulary and Comprehension

A reciprocal relationship is evident between vocabulary skills and reading comprehension. Children who have learned more vocabulary words are more likely to demonstrate stronger comprehension skills and know the meaning of more words they read in a text (Ford-Connors & Paratore, 2015; van Steensel, Oostdam, van Gelderen, & van Schooten, 2016; Wright, 2013). Students with higher levels of reading comprehension and vocabulary development tend to read more and learn more words from text; they also perform better on standardized achievement tests as compared to their peers with lower levels of reading comprehension and vocabulary development (Stahl & Fairbanks, 1986 as cited by Ford-Connors & Paratore, 2015). Concurrent correlations between vocabulary and reading comprehension are high—usually over .80 (Biemiller & Boote, 2006). Educators can make a difference in the lives of their students by “drawing on the strong correlation (the ability to predict performance of one measure based on another) between vocabulary and reading comprehension” (Palumbo, Kramer-Vida, & Hunt, 2015, p. 109).

Vocabulary development is a central thread across specified literacy areas in the latest rubric for K–5 reading and language arts instructional materials (Foorman, Smith, & Kosanovich, 2017). This rubric keeps reading for understanding at the forefront of literacy activities and includes ratings from 1 (criterion not met) to 5 (criterion completely met) for building skills in the areas of foundational reading, reading comprehension, writing development, speaking and listening, and language development.

Focus on Academic Vocabulary

Vocabulary development is deepened by a focus on academic vocabulary. Academic vocabulary instruction includes teaching words that occur frequently in texts but infrequently in oral conversations (Lesaux, Kieffer, Kelley, & Harris, 2014). Word choice is critical when it comes to enhancing vocabulary development using academic vocabulary. Criteria for identifying these words typically include their importance and utility, ability to offer conceptual understanding, and instructional potential (see Beck et al., 2013 for details on how to choose words for instruction). All words are not equally important to teach, however (Beck, McKeown, & Kucan, 2008). Guidance in choosing words based on research recommendations or guidelines may be helpful for educators when it comes to systematic academic vocabulary development across grades.

Wordly Wise i3000 includes a focus on high-utility and academic vocabulary, comprising instruction on 3,000 words (hence the program’s title) across Levels 2–12. A majority of these words overlap with words that appear frequently in school-based text sources. For example, *Wordly Wise i3000* draws attention to words from Averil Coxhead’s well-respected Academic Word List (AWL) (see www.uefap.com/vocab/select/awl.htm). The AWL was cited as an important word list to utilize by Biemiller (2012). AWL words in *Wordly Wise i3000* word lists are marked with an asterisk (*) to allow teachers who wish to spend more instructional time



on these words to easily do so. For students with both on-level and below-level vocabularies, *Wordly Wise i3000* ensures exposure to a core of high-utility vocabulary words used frequently across domains.

Wordly Wise i3000 words were chosen in consultation with two major references: *The Living Word Vocabulary* (Dale & O'Rourke, 1981) and *The Reading Teacher's Book of Lists* (Fry, Kress, & Fountoukidis, 2000). *The Living Word Vocabulary* provides information about the grade levels at which a given word is known by most children. Following current research guidelines for vocabulary instruction of early elementary grades (Biemiller & Boote, 2006), words were selected that are known by most children in sixth grade and that correspond to the conceptual level of development of children in second and third grade. *The Reading Teacher's Book of Lists* provides words that appear in upper elementary science and social studies texts as well as frequently used descriptive adjectives and adverbs. Most words in *Wordly Wise i3000* appear on one of these lists and meet *The Living Word Vocabulary* criteria.

Many of the words chosen are more sophisticated words for known concepts, such as *release* (let go), *leap* (jump), and *delighted* (happy). Other words, such as *nation*, *decay*, and *reflect*, name important new concepts. In addition, *Wordly Wise i3000* introduces students to the notion of multiple meanings and systematically teaches multiple meanings of familiar words such as *row*, *ring*, *patch*, *trunk*, and *store*.

Words for upper elementary through high school grades were chosen based on the early work of Harris and Jacobson (1982) related to word frequency in school readers and the grade level of a word's first appearance. For example, consider the words *enormous* and *gigantic*: *Enormous* occurred two hundred times and first appeared in most third- or fourth-grade readers. *Gigantic* occurred fifty times and in the majority of readers did not appear until fifth or sixth grade. *Enormous* is in Level 2 of *Wordly Wise i3000*, while *gigantic* appears several levels later in Level 5. Other factors that inform word choice include usefulness (thereby favoring *arduous* while eliminating *aardvark*), number of meanings (including *mammoth*, as both noun and adjective, while rejecting *mermaid*), and correlations with the SAT and various high-stakes assessments.

Three-Tier Framework

To select the most productive words to teach, Beck et al. (2013) devised a three-tier framework. Tier One words are those that occur most frequently in everyday life—they are considered easier words because students are likely to hear and learn them in daily use. Words such as *cat*, *run*, *strong*, *big*, *party*, etc., are Tier One words. Tier Two words are high-utility words that are often found in written text but are used infrequently in daily conversation; given their infrequent use, they are less likely to be learned as compared to Tier One words. Words such as *obtrusive*, *vanquish*, *exorbitant*, *enormous*, *depreciate*, *raucous*, etc., are Tier Two words (these words all appear in *Wordly Wise i3000*). Tier Two words are those targeted for instruction given their powerful impact on verbal functioning (see Beck et al., 2013) and



comprise words lists previously mentioned, like the AWL. Finally, Tier Three words are low-frequency words that are often limited to specific domains. These words are best taught within subjects (e.g., science, social studies, and math) when the need arises for knowledge of domain-specific vocabulary. Words such as *filibuster*, *epidermis*, *isotope*, *photosynthesis*, etc., are considered Tier Three words.

The majority of the words in *Wordly Wise i3000* are Tier Two general academic words. The program focuses on high-utility words that have a powerful impact on verbal functioning, appear frequently in text but infrequently in daily conversation, and are cited as important to learn based on their appearance in well-respected word lists such as the AWL. Thus, this vocabulary program follows best practices regarding differential attention to word selection and choosing important words to teach.

Vocabulary Assessment

Vocabulary knowledge is essential for success on today's high-stakes tests. Even if teachers do not emphasize word study for its own sake, they are held accountable for their students' performance on state and national assessments.

In 2009, the National Assessment of Educational Progress (NAEP) integrated the vocabulary measure of understanding word meaning with a measure of passage comprehension (National Center for Education Statistics [NCES], 2012). Students were asked to demonstrate word knowledge based on word meaning in context. A sample NAEP question follows:

On page 2, the author says that her mother 'thought she could **replicate**' the great-grandfather's mint syrup. This means the author's mother thought she could

- (a) buy back the mint syrup recipe
- (b) make mint syrup that tasted like his
- (c) remember how the mint syrup tasted
- (d) make a better mint syrup than his

(NCES, 2012, p. 15)

To answer this question correctly as (b) students had to use their understanding of the word to interpret a part of the passage. The Partnership for Assessment of Readiness for College and Careers (PARCC) (see <https://parcc.pearson.com/practice-tests/english/> for sample test questions) and Smarter Balanced Assessments in English Language Arts (see <http://sampleitems.smarterbalanced.org/>) now assess vocabulary knowledge in similar ways as the NCES (2012).

Interestingly, average scores in NAEP vocabulary at Grades 4, 8, and 12 in 2009 and 2011 showed that those students who scored the highest in reading comprehension also had the



highest vocabulary scores (NCES, 2012). Those who exhibited the lowest average vocabulary scores performed in the lowest percentile in reading comprehension. According to NCES (2012), “understanding word meaning has always been essential to reading comprehension. Whether reading the printed page or a computer screen, a strong sense of word meaning provides a basis for greater comprehension in an increasingly fast-paced world” (p. 1).

The standards movement across the United States (including the Common Core State Standards [CCSS] and newly revised state standards in those states not utilizing the CCSS) has raised the bar for all students, making vocabulary instruction aligned to today’s standards and corresponding assessments absolutely essential. Expectations are now higher, assessments are more contextually based, and the curriculum is becoming more challenging to promote college and career readiness (see Shanahan, Fisher, & Frey, 2012 on their discussion of the “challenge of challenging text”). The need is greater than ever for an emphasis on robust vocabulary instruction beginning as early as kindergarten for all students, particularly those who struggle to pass the high-stakes tests that are aligned with more challenging standards to better prepare students for college and careers.

Wordly Wise i3000 was designed to include a large percentage of words drawn from a variety of standardized tests to help students succeed. Further, lessons include reading passages with subsequent context-specific questions based on the passage. Thus, the program includes

Program Example 1: *Wordly Wise i3000* lesson tests mirror high-stakes and standardized assessments.

Lesson Test 1

Wordly Wise i3000
Level 10 • Lesson Test 1

Test completed at 75%

Standardized Test Preview/Practice

In this passage, some of the words from this lesson are in bold. Answer the question that follows.

(1) At exactly 4:15 in the morning, Luis heard the **unremitting** sound of a car alarm’s *bleep bleep bleep bleep bleep* outside his window. The next thing he heard was people yelling, laughing, and playing music—loudly. Not again!

(2) He groaned and pulled his covers over his head. He liked having a window next to his bed, but not when the neighbors were being **rambunctious** in the middle of the night. For a minute he imagined confronting them with **asperity** and demanding that they turn off the music. But that was something a more **extroverted** person would do. Luis was simply too shy to do anything like that.

(3) A minute later he heard the **doleful** sound of a child crying. Now he was worried instead of bothered. But he could just make out a woman’s soothing voice, and after a while, the crying stopped. Luis, unfortunately, never fell back to sleep.

16. The word **unremitting** (paragraph 1) most nearly means

A. obnoxious.

B. unreasonable.

C. uninterrupted.

D. unnecessary.



contextually based vocabulary activities much like those found in high-stakes and standardized assessments. Finally, online practice and assessment activities are provided that mirror many high-stakes and standardized assessments.

Need for Vocabulary Instruction

The well-documented research of Hart and Risley (1995, 2003) points to a significant vocabulary gap among various groups of children by the age of three. This gap reflects how often and with what vocabulary parents talk to their children: (a) children from professional families had a working vocabulary of more than 1,000 words; (b) children from working-class families had a working vocabulary of just under 800 words; and (c) children from families who were on welfare had a working vocabulary of fewer than 600 words. According to Nelson et al. (2015), students from lower-income backgrounds acquire far fewer than the 3,000 words (on average) learned per year. In fact, these authors note, “this vocabulary gap is one of the most persistent and vexing issues in reading instruction today” (p. 145). Explanations for this gap relate to family background along with a lack of instruction and extended reading opportunities in school. A focus should be placed on closing this gap to ensure all students are college and career ready; all evidence points to the necessity of more focused instruction in vocabulary development.

Researchers debate over the number of words that should be taught per week. For example, Beck et al. (2013) and Diamond and Gutlohn (2006) recommend targeting 8 to 10 words per week for instruction. Biemiller (2012) notes 20 to 25 words should be included in instruction, noting also that students will actually learn only about 10 of those words.

Wordly Wise i3000 targets 3,000 words across Levels 2–12. The progression through the levels of *Wordly Wise i3000* is dependent upon the grade level of the student; it is generally recommended that students begin the program in the level that corresponds to their grade level (i.e., a student in third grade would begin *Wordly Wise i3000* in Level 3). Levels 2 and 3 each teach 150 words over 15 lessons (10 words per lesson). Levels 4–12 each offer instruction on 300 words over 20 lessons (15 words per lesson). Stahl (1999) found that 300 words was a realistically achievable amount for students to learn in the middle grades. Thus, *Wordly Wise i3000* incorporates evidence-based practices by introducing 10 words per week in second and third grades and 15 words per week in fourth grade and above. Given the importance of vocabulary development and the difficulties many students exhibit in this area, “there is good reason to teach vocabulary more aggressively” (Pearson, Hiebert, & Kamil, 2012, p. 231), particularly as students progress through school.



Program Example 2: Wordly Wise i3000 targets 3,000 words across Levels 2–12.

Sample Word Lists

LEVEL 2	LESSON
absorb	5
boulder	3
calf	1
enormous	2
flame	4
instrument	15
motor	3
settle	13
tread	7
zero	1

LEVEL 6	LESSON
abbreviate	11
beneficial	8
diminish	9
exhilaration	18
hectic	3
integrate	2
monotonous	7
ravenous	7
scour	17
tranquil	5

LEVEL 10	LESSON
accolade	4
bemuse	16
culpable	12
differentiate	10
largesse	7
omnivorous	7
pandemonium	9
rambunctious	1
somnolent	13
vanguard	8

LEVEL 3	LESSON
ambition	3
cocoon	4
enable	6
gradual	9
league	5
mystify	7
responsible	14
steer	2
tentacle	1
vigorous	11

LEVEL 7	LESSON
acknowledge	1
benefactor	3
complement	15
grueling	19
irate	8
maintain	4
recede	9
solitude	2
ultimate	11
whim	7

LEVEL 11	LESSON
abeyance	14
blasphemy	8
commensurate	14
extrapolate	20
imperturbable	1
multifarious	11
perspicacious	6
repugnant	15
subversive	16
vicissitudes	11

LEVEL 4	LESSON
active	4
blossom	16
dreary	13
essential	19
glimpse	5
observe	3
permit	2
quiver	20
represent	1
utter	1

LEVEL 8	LESSON
ascertain	15
capacious	8
decipher	14
feasible	19
imperative	3
languish	10
memoir	18
pervade	1
renown	11
tremulous	4

LEVEL 12	LESSON
adumbrate	2
beneficent	3
concatenation	16
dichotomy	7
fulminate	11
lassitude	18
nugatory	11
ostensible	4
propinquity	20
replete	8

LEVEL 5	LESSON
accurate	4
boisterous	14
cumbersome	20
harbor	6
investigate	15
mimic	9
obstacle	1
purchase	2
tempest	12
vertical	5

LEVEL 9	LESSON
accentuate	15
beneficiary	10
concede	6
empathize	12
gregarious	14
memorabilia	20
obtrusive	14
recipient	17
sedentary	4
ubiquitous	2



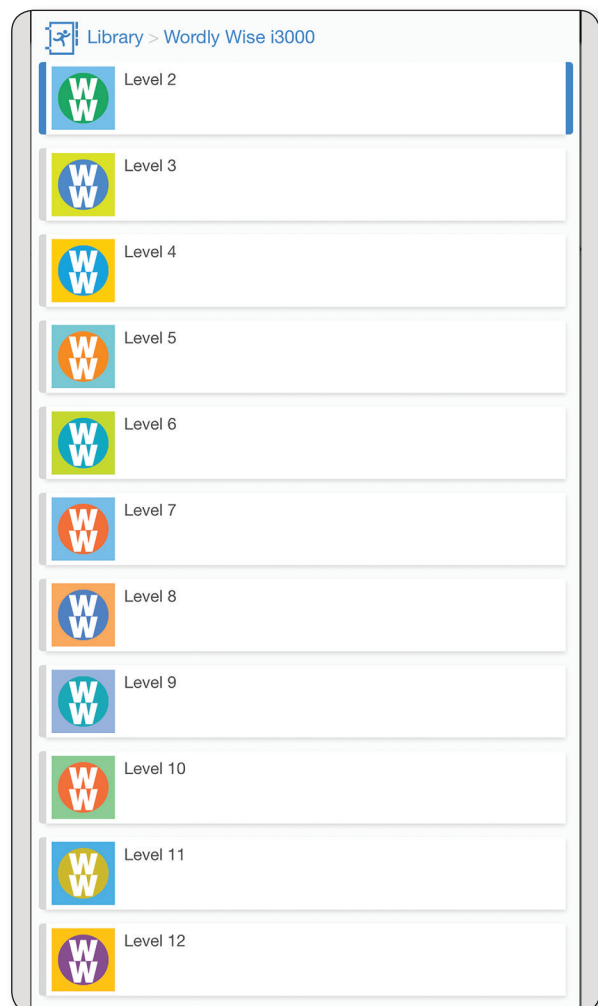
Multi-Tier Instructional Support

Vocabulary knowledge plays a central role in reading achievement across the grades. Thus, efforts should be made to target vocabulary instruction as early as possible, starting in kindergarten and continuing instruction through high school. Multi-tier instructional support—where the focus is placed on Tier 1, general-education-based instruction to prevent difficulties in closing the vocabulary gap—is warranted (Loftus & Coyne, 2013). “A multi-tiered system of support (MTSS) provides a promising framework for meeting the needs of the full continuum of students, particularly those students who are at risk for experiencing learning difficulties” (Cuticelli, Coyne, Ware, Oldham, & Loftus Rattan, 2015, p. 150). In a multi-tier instructional approach, teachers provide consistent, whole-class, Tier 1 instruction using quality research-based tools and methods (Cuticelli et al., 2015). Teachers benefit from structured online lessons that offer a seamless implementation within and across the grades.

Students who struggle, including students who are at risk for school failure (e.g., students with disabilities and those from culturally and linguistically diverse backgrounds), benefit from focused instruction at the Tier 1 level, particularly when it can be managed by teachers in real time. If students need structured vocabulary instruction beyond what is offered at the Tier 1 level, small group instruction can be delivered at the Tier 2 level (Loftus & Coyne, 2013; Vadasy, Nelson, & Sanders, 2011). Typically, an additional 30 minutes of daily focused instruction is provided at each additional level of instruction. More strategic and intensive instruction is given in smaller groups or one-on-one at Tiers 2 and 3. Instructional materials that are consistent, sequenced, and that offer robust instruction are needed for successful MTSS implementations.

Wordly Wise i3000 provides online, sequential, and systematic vocabulary instruction for students

Program Example 3 *Wordly Wise i3000* offers sequential and systematic vocabulary instruction for students in Grades 2–12.





in Grades 2–12. In Tier 1, general education teachers invite students to participate in research-based lessons offering a myriad of student activities that promote consistent direct instruction to build higher levels of vocabulary; teachers oversee student work in real time. These same lessons can offer students who need more focused instructional support the opportunity to build important vocabulary skills at Tier 2. In this way, *Wordly Wise i3000* can be an important part of providing multi-tier instructional support.

Specific Needs of Learners

Primary- and intermediate-level students identified as having learning disabilities (LD) along with those from culturally and linguistically diverse backgrounds (English learners [ELs]) are often characterized as having language needs that warrant vocabulary development (Beck et al., 2013; Kame'enui & Baumann, 2012; Spies & Dema, 2014). Manyak (2012) calls for more powerful vocabulary instruction for ELs as early as possible in their academic careers. This instruction can be delivered in a multi-tier instructional approach. Additionally, Kuder (2017) notes that vocabulary difficulties are often seen in students in later grades; frequently, secondary students with LD and other disabilities are less prepared for college and careers given these challenges. However, it is key to remember that good instruction and curriculum in general does hold true for ELs (see Goldenberg, 2008 for details) and students with learning disabilities (Archer & Hughes, 2011). *Good instruction is good instruction*. ELs and those with LD benefit from instruction (just as at-risk and on-level students do) that is explicit and systematic in nature; offers opportunities to practice, apply, and transfer learning over time; includes frequent assessment to gauge progress; is differentiated when needed; and has opportunities for students to interact with their classmates in motivating and meaningful ways.

One key feature of *Wordly Wise i3000* that is helpful for ELs and students who are at risk for school failure is the use of a secondary reading passage, written at a lower grade level than the on-grade-level passage, which can be administered by teachers through the online system when context-based vocabulary practice is required within the program. The secondary passage is written so that all students, regardless of which passage they read, are expected to complete the same context questions. The secondary passage is written with lower text complexity to ensure that students who need reading support can still apply their knowledge of vocabulary in context. Although students work on an assigned lesson at their own pace, teachers oversee students' progress in real time.

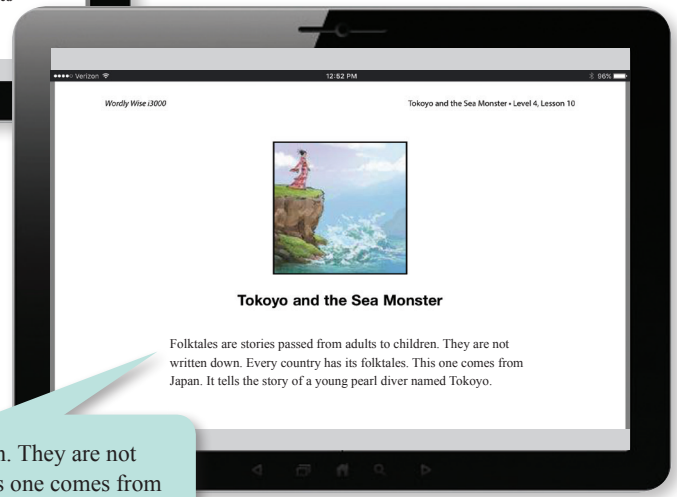


Program Example 4 Primary and secondary passages support classroom differentiation. Students answer the same questions whether they read the on-level or below-level passage.



On-grade-level passage

Folktales are legends of past events that are passed on from adults to children without ever being written down. Every country has its folktales, and this one from Japan comes to mind. It tells of the adventures of a young pearl diver named Tokoyo who lived in Japan.



Below-grade-level passage

Folktales are stories passed from adults to children. They are not written down. Every country has its folktales. This one comes from Japan. It tells the story of a young pearl diver named Tokoyo.

4 • Lesson 10

► Drag and drop the correct word into each sentence to complete it.

- In the Japanese folktale, Tokoyo worked as a pearl diver searching for oysters on the seabed. The story does not say how her father earned his ____.
- Tokoyo's mother died when she was just a baby. Losing her father was the second great ____ to affect the young girl.
- When her father was taken away, Tokoyo felt parentless. She wasn't an actual ____, of course, because her father was still alive.
- Even though the emperor was powerful, he didn't get everything he wanted. What he ____ most was an end to all his illnesses.

communicated deliberation banished cowered regained orphan
 consoled slain precipice livelihood symptom ailment desired



Online Instruction

Computers are ubiquitous in the home and classroom and are now a mainstay when teaching academic skills to students. They offer teachers the unique ability to oversee instruction at many student skill levels (encompassing differences in students' prerequisite knowledge and optimal learning pace); they allow for increased autonomous learning (Chiu, 2013). Hattie (2009) noted:

Computers are used effectively (a) when there is a diversity of teaching strategies; (b) when there is pre-training in the use of computers as a teaching and learning tool; (c) where there are multiple opportunities for learning (e.g., deliberate practice, increasing time on task); (d) when the student, not the teacher, is in “control” of learning; (e) when peer learning is optimized; and (f) when feedback is optimized. (p. 221)

Flaum-Horvath et al. (2017) described the important aspects of computer-based instruction, reporting benefits in student engagement and student attitudes. Computer-based instruction is an effective motivation tool, particularly when games are incorporated (see Blachowicz & Fisher, 2012). Computers and instructional technology can be an effective part of a schoolwide solution to learning vocabulary (NICHD, 2000; Stoner, Beck, Dennis, & Parette, 2011).

Online vocabulary instruction has been shown to improve vocabulary skills and to address the need for efficiency in remediation of skill deficits (Fehr et al., 2012). Interestingly, Wong, Chin, Tan, and Liu (2010) used in-class and online sharing and discussion of student-developed artifacts and found improvements in vocabulary learning. Naghdipour and Eldridge (2016) found benefits of participation in a social networking site (much like Facebook) related to vocabulary knowledge. Finally, Wong and Looi (2010) stated online discussion was an important way to enhance vocabulary knowledge, “transforming language learning into an authentic seamless learning experience” (p. 421).

Robust Vocabulary Instruction

“We do know that if attention *is* given to vocabulary development it *can* make a difference” (Beck et al., 2008, p. 3). We also know that the answer to the question, “How should vocabulary differ as you go up the grade levels?” is ‘not that much’—that is, all the basic principles for effective, engaging instruction hold from kindergarten to high school” (Beck et al., 2008, p. 39). Unfortunately, as Gallagher and Anderson (2016) noted, there appears to be a lack of robust vocabulary instruction in United States classrooms. Additionally, Wanzek (2014) noted that 8% of core classroom reading instruction was devoted to teaching vocabulary and that minimal amounts of direct vocabulary instruction were evident in supplemental, intervention-based programs. In fact, vocabulary instruction in supplemental reading interventions was typically incidental in nature and consisted of “mere seconds of instruction”



(p. 160). Thus, it appears critical that programs include robust vocabulary instruction in Grades K–12. But what makes vocabulary instruction *robust*?

“The operative principle for vocabulary instruction is that it be robust: vigorous, strong, and powerful in effect. A robust approach to vocabulary involves directly explaining the meanings of words along with thought-provoking, playful, and interactive follow-up” (Beck et al., 2013, p. 3). Robust vocabulary instruction should include (a) self-assessment, (b) active learning opportunities or routines, (c) student-friendly definitions, (d) multiple and varied exposures and review, (e) context-based practice, and (f) motivational activities.

Self-Assessment

The progression of students’ knowledge of word meanings has been described in four stages: “(1) have never seen or heard the word before, (2) have seen or heard the word before, (3) vaguely know the meaning of the word; can associate it with a concept or context; and (4) know the word well; can explain it and use it” (Diamond & Gutlohn, 2006, p. 5). Self-assessment is an essential component of instruction and shows students that “word knowledge is indeed multifaceted” (Beck et al., 2013, p. 18). Having students think about what they know about a word before instruction occurs is an important part of a robust approach to vocabulary instruction. Students become an integral part of the assessment process when self-assessment is used.

In Wordly Wise i3000, students participate in self-assessment in an activity that asks them to rate their level of word knowledge. This allows students to judge their own knowledge of word meanings *before* instruction begins.

Program Example 5: The *Wordly Wise i3000* Rate Your Word Knowledge activity encourages self-assessment of word knowledge, part of a robust approach to vocabulary instruction.

The screenshot shows a digital interface for a self-assessment activity. At the top left, it says "6 • Lesson 1". To the right are five numbered tabs (1-5), with tab 1 highlighted in blue. Below this is a green banner with the text "WORDLY WISE" on the left, the "WW" logo in a blue circle in the center, and "i3000" on the right. Underneath the banner, the title "Rate Your Word Knowledge" is displayed in blue. The word "affection" is shown in bold black text. Below it are four radio button options: "I've never seen this word before.", "I've seen this word before, but I don't know what it means.", "I think I know what this word means." (which is selected), and "I know what this word means and can use it in a sentence." At the bottom right, there is a blue "Submit" button with a graduation cap icon.



Active Learning Opportunities or Routines

Active learning is a key element of vocabulary instruction. Active learning involves student participation in the learning process that requires them to make associations and engage in opportunities to practice, apply, and discuss word knowledge (Taylor, Mraz, Nichols, Rickelman, & Wood, 2009). Students are not passive recipients of learning; instead, they engage in thoughtful and planned activities that align with the goals of a lesson. These planned activities can be even more effective when taught using specified routines (Manyak et al., 2014); routines increase instructional comfort because students can predict how instruction will occur from one lesson to the next.

When students are naïve learners, they should receive more direct instruction (also known as explicit instruction; see Archer & Hughes, 2011 for details on this important instructional delivery model) from the teacher; scripted instructional routines prove helpful in this regard. Direct vocabulary instruction includes intentional online instruction, usually with modeling, explanations, and think-alouds (Wanzek, 2014). Scaffolded support is a key element of direct instruction (Rosenshine, 2009). Teaching explicitly has been shown to be effective across a wide range of learners (Nelson et al., 2015), including on-level children and those who are at risk for school failure (e.g., students with disabilities, ELs, and students from low-socioeconomic areas).

Marzano (2009) recommends six best practices when direct or explicit vocabulary instruction is used: (1) providing descriptions, explanations, and examples of words and using them in context; (2) asking students to restate descriptions, explanations, and examples in their own words; (3) asking students to create pictures or symbolic representations of words; (4) recording words in vocabulary logs or portfolios; (5) engaging students in discussing vocabulary words with one another; and (6) involving students periodically in games that enable them to play with words.

Wordly Wise i3000 includes direct vocabulary instruction wherein students are guided through online instructional learning activities with clear explanations and modeling. Routines are evident across the program; with these routines, students gain confidence based on the predictability of how instruction will be provided from one lesson to the next and from one level to the next. *Wordly Wise i3000* follows the six best practices of direct and explicit vocabulary instruction advocated by Marzano (2009).

Student-Friendly Definitions

When vocabulary words are defined, everyday language that is clear and accessible to students should be used (Diamond & Gutlohn, 2006). These “student-friendly” definitions should (a) capture the essence of the word and how it is typically used and (b) explain its



meaning using everyday language (see Beck et al., 2008, 2013 for details). Providing context for a word by using it in a sentence helps students see how the word can be incorporated into text and offers context clues that help ensure understanding of word meaning.

Wordly Wise i3000 uses student-friendly definitions of vocabulary words as often as possible. These targeted words are also used in sentences to enhance meaning. For example, the vocabulary word *diligent* from Level 6, Lesson 5 is defined as “working with great care and effort” and is used in the following sentence: “**Diligent** students succeed in reaching their goals.” The accompanying contextual sentence supports the student-friendly definition of the word. In Level 9, Lesson 12, the vocabulary word *impair* is defined as “to damage, weaken, or lessen” and is accompanied by the following contextual sentence: “Fewer than six hours of sleep can **impair** a person’s ability to drive.”

Program Example 6: *Wordly Wise i3000* uses student-friendly definitions and contextual sentences to introduce vocabulary.

diligent

(adj) Working with great care and effort.

Diligent students succeed in reaching their goals.



impair

(v) To damage, weaken, or lessen.

Fewer than six hours of sleep can **impair** a person’s ability to drive.

impairment (n)

Her hearing **impairment** developed during an illness.



Multiple and Varied Exposures and Review

The National Reading Panel Report (NICHD, 2000) noted that repeated exposure to vocabulary words was a critical part of providing robust vocabulary instruction. Further, the largest gains were made in those studies that extended vocabulary instruction beyond a single class and included multiple exposures of words in varied contexts. As Wanzek (2014) noted, “it is clear that shallow, single-exposure vocabulary instruction may not be enough for students to enhance reading comprehension” (p. 142). Beck et al. (2007) found in their study that kindergarten and first-grade students who received four times as many exposures to vocabulary words produced double the amount of learning (as cited in Beck et al., 2008). Experiencing many encounters with a word helps ensure students know its meaning when they come across the word in a new context. These encounters can be brief but should allow students to process word meanings and relationships (Beck et al., 2008). Multiple and varied exposures lead to deeper processing of word meaning (Loftus-Rattan et al., 2016).

Activities that can be used to increase the number of encounters with vocabulary words include (a) instructional cloze sentences (Palumbo et al., 2015); (b) multiple-choice, true/false, context interpretation, and example/nonexample questions (Beck et al., 2013); and (c) making choices, matching, creating examples, determining synonyms and antonyms, completing sentences, answering open-ended questions, and finding relationships (Beck et al., 2013). McGlynn and Kozlowski (2017) have said that Quizlet is a “fabulous online study tool” for students to increase exposure to and review of vocabulary words (p. 91). Dang (2015) reported the benefits of using a web-based, flashcard-practice program such as Quizlet to increase the size of one’s vocabulary, provide a motivational and multimedia (game-like) approach to learning, track student performance, and allow students to study at any time they have access to the Internet.

Wordly Wise i3000 offers a routine for teaching vocabulary words. Students first complete a self-assessment of their word knowledge, and then review words in the word lists or using Quizlet study options. Following this, students engage in active learning by encountering words in several contexts. These activities demonstrate the shades of meaning of each word. Students form a network of associations and connections with a word when they identify its synonyms and antonyms, determine whether it fits certain contexts, encounter it in a reading passage, and answer questions that depend upon word knowledge for comprehension.

Higher grade-level practice features more intensive work with synonyms and antonyms, analogies, images, and instructional cloze. For example, the word *represent* is used across a series of exercises in Level 4, Lesson 1. Students first see the dictionary definitions of the word. Then they meet the word in a variety of exercises and contexts.

Students experience multiple exposures to each word in *Wordly Wise i3000*. They meet the word repeatedly during the lesson, and through spiraled review in subsequent lessons, in a variety of listening, reading, and writing situations. Each lesson includes a reading passage with



an open-ended response question (or a multiple-choice question in Level 2) and a related set of additional context-based items. Application activities follow, including illustrating vocabulary, vocabulary extensions, and creative writing. After the full set of 11 activities, students can use Quizlet gaming options for additional practice.

Program Example 7: Reading Comprehension and Vocabulary Extension activities offer students extra practice in determining contexts, deepening knowledge, and using words in sentences.

Reading Comprehension

1. Not many people have heard of Marguerite Johnson. She is far better known by her _____, Maya Angelou.
2. Angelou wrote about her life in five volumes of autobiography. She sums up her life quickly and _____ in one of her poems.
3. Angelou's books describe human behavior in all its forms. She shows not only how evil and _____ people can be but also how noble they can be.
4. Bertha Flowers, who loved books, was a strong influence on the young Angelou. Angelou _____ her neighbor by becoming a lover of books, too.

brusqueness pervasive resilient avid excruciatingly concisely
 demeaned evocative inauguration pseudonym turbulently rebuffed

Vocabulary Extension

- Return to the Illustrated Vocabulary activity in Scene 7 to view your classmates' drawings and images of the word **simulate**. Read what they wrote about the word.

Many things can be **simulated** to look genuine. For example, **simulated** diamonds or sunshine can be made to look and feel very real.

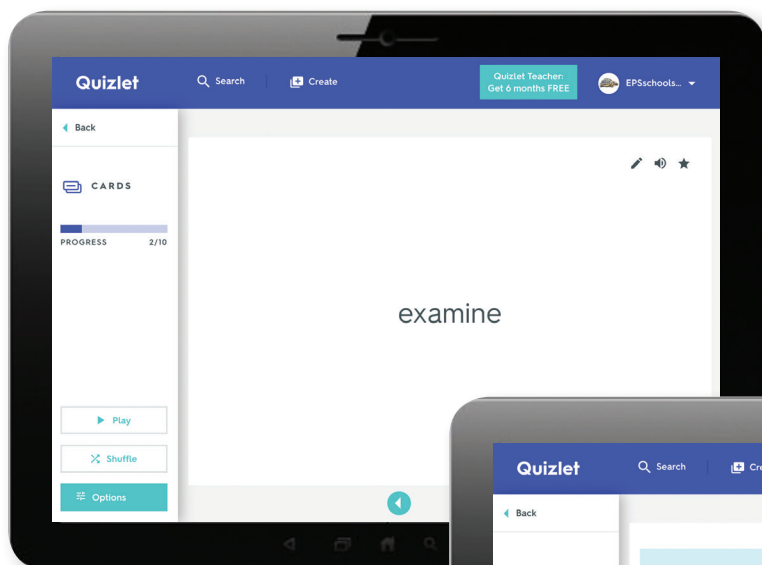
- In this table, write at least one example of something that is often **simulated** to look genuine, and one example of something that might be difficult to **simulate** to look genuine.



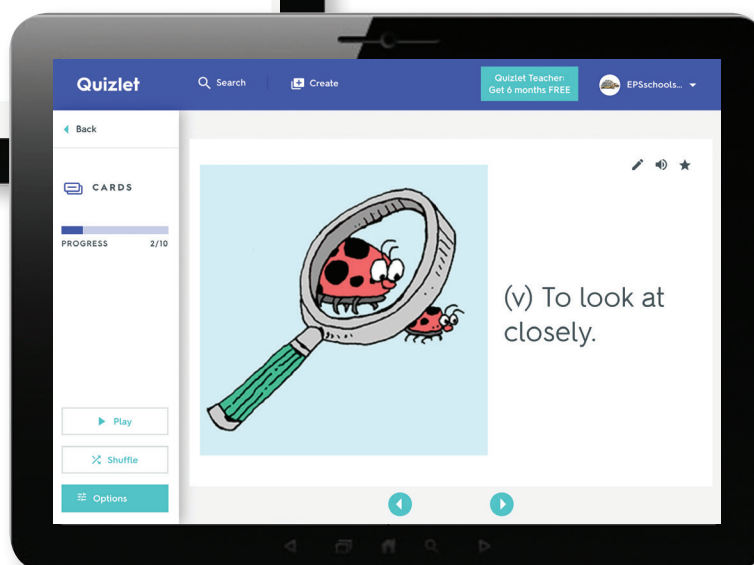
Examples and Non-Examples

What is something that is often simulated to look genuine?	What is something that might be difficult to simulate to look genuine?

Program Example 8: Official *Wordly Wise i3000* Quizlet flashcard for the vocabulary word *examine*, taught in Book 3, Lesson 20.



Flashcard front



Flashcard back

Context-Based Practice

The ultimate goal of vocabulary instruction is for students to determine word meaning in authentic context. Beck et al. (2013) called for vocabulary instruction to include practice using vocabulary words in this manner. Vocabulary assessment should be conducted based on how words are used in context (Beck et al., 2013; Pearson et al., 2012). Sometimes a word’s context is not all that helpful in determining meaning. According to Diamond and Gutlohn (2006), “for this reason, it is useful to intentionally create and develop instructional contexts that provide strong clues to a word’s meaning. Instructional contexts are usually created by teachers, but can sometimes be found in commercial reading programs” (p. 25).



Wordly Wise i3000 includes vocabulary-in-context passage activities in which students read a passage and answer a series of context-based questions related to their knowledge of the lesson's vocabulary words. Instructional contexts are created to provide helpful clues to word meaning throughout the passages.

Program Example 9: Instructional contexts provide clues to word meaning in every *Wordly Wise i3000* passage.



Communicating with Koko

American Sign Language (ASL) is a form of communication that is as rich and flexible as spoken English. It is used by hundreds of thousands of hearing-impaired people. Each gesture of the hand or arm has a particular meaning. In the early 1970s, a most unusual student began learning to communicate through ASL. Her name was Koko, and her teacher was Dr. Francine Patterson.

9. Koko soon discovered that the second kitten was real. She did not have to be _____ to play with the real kitten.
10. Koko and the kitten were able to communicate. All Ball liked Koko's gesture of stroking her fur.
11. Koko took All Ball for rides. The kitten _____ tightly to the fur on the gorilla's back.
12. Koko liked to stroke All Ball. All Ball enjoyed being _____ because Koko was so gentle.

recovered preferred caressed replaced amiable bliss requested
ability moped separated coaxed fury clutched shunned

Motivational Activities


Vocabulary instruction should include word play that increases motivation. Word play involves engaging games and activities that help reinforce word meaning. “When children are having fun—when they see a purpose or direction to their learning—learning takes on a more authentic, more welcoming quality” (Johnson, Johnson, & Schlichting, 2012, p. 210). Teachers should incorporate word-play activities such as games as much as possible (Gallagher & Anderson, 2016). Blachowicz and Fisher (2012) noted that word play keeps the “fun” in the fundamentals of vocabulary development as students develop “word consciousness.”

Finally, as previously stated on the benefits of online learning, Wong et al. (2010) used motivational online sharing and discussion of student-developed artifacts and found improvements in vocabulary learning, while Naghdipour and Eldridge (2016) noted the benefits of participation in a social networking site (much like Facebook) related to vocabulary knowledge. Wong and Looi (2010) found online discussion an important way to enhance vocabulary knowledge, “transforming language learning into an authentic seamless learning experience” (p. 421).


Wordly Wise i3000 incorporates motivational social sharing and interaction in three application activities—Illustrated Vocabulary, Vocabulary Extension, and Creative Writing. In these activities, students actively apply their vocabulary knowledge in a social learning environment. In the Illustrated Vocabulary activity, students create an image to demonstrate a word’s meaning and write a sentence explaining how the image represents the word.

Illustrated Vocabulary

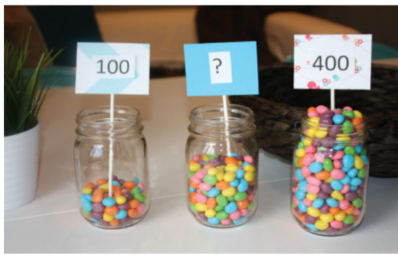
- ▶ Think about what the word **estimate** means.
- ▶ Upload an image that shows what **estimate** means, or draw a picture below.
- ▶ Write a sentence to explain how your image shows what **estimate** means.



Jennifer Watts



When you guess the quantity of candy in the middle jar, you are making an estimate.



Program Example 10:
The Illustrated Vocabulary activity deepens learning by asking students to demonstrate a word’s meaning with an image they find or create.



Once students submit their response, they are able to see what their peers have submitted. Each image and sentence students create contributes to a virtual word wall, which is viewable by the entire class. Students are motivated by what others have created, while benefiting from seeing various ways a word's meaning can be represented visually. The collaborative and social nature of this activity helps students, especially English learners, gain a more complete understanding of a word's meaning.

In the Vocabulary Extension activity, students focus on one key academic word from the lesson. The writing they do is shared with their classmates, allowing students to interact with one another as they demonstrate their word knowledge. Activities vary; students may associate a word with a color, and explain in writing how the word relates to that color. This activity strengthens semantic connections so that students remember the word and its meaning long after they have completed the lesson.

In the Creative Writing activity, students create their own unique sentences using selected vocabulary words. The creative writing prompts often include evocative visual images, which inspire students to write while using words in context. Students gain ownership of words when they use them in their own writing. The social sharing aspect of this activity motivates students to put effort into using vocabulary words correctly as they interact with peers.

Students must write their own sentences before they can see what their classmates have written. The more sentences they read, the more exposure they have to varying and creative uses of words in context—a key factor in understanding word meaning and retaining word knowledge long term.

As students write sentences and respond to one another in these social activities, teachers can see student work in real time. They can check to see if the class as whole is grasping a particular word or if specific students need help. Teachers can respond to individual students or make comments to the entire class.

“Motivation is a key factor in comprehension” (McLaughlin, 2012, p. 432). Other motivational activities involve peer interactions, wherein students engage with one another in their use of vocabulary words. Kuder (2017) noted improvements in academic performance through these types of peer-based approaches. Another strategy shown to be effective in motivating students to participate at higher levels is think-pair-share. This cooperative-learning discussion strategy involves having students “think” about a question posed by the teacher, “pair” with another student to discuss the question for a length of time, and “share” what they found with the class when called upon by the teacher (Kaddoura, 2013). Shih and Reynolds (2015) found positive results in the use of this approach and noted students are generally receptive to working with one another.

Wordly Wise i3000 includes a derivation of the think-pair-share strategy where students interact virtually with peers to cement word meanings. Students use words in virtual conversation with their peers.

Program Example 11: *Wordly Wise i3000* Vocabulary Extension includes an activity that is a derivation of the think-pair share strategy to encourage student engagement.

Vocabulary Extension

- Return to the Illustrated Vocabulary activity in Scene 7 to view your classmates' drawings and images of the word **precedent**. Read what they wrote about the word.

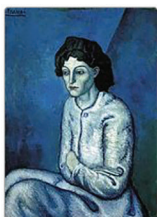
When you looked at your classmates' images of the word **precedent**, did any color stand out? Did more than one person use the same color?

- Choose a color and then write a sentence to explain how the color you chose relates to the word **precedent**.



Pete Mark 22/06/2017 10:58 AM

The color blue relates to the word precedent for me because of the painter Pablo Picasso. His Blue Period from 1901-1904 really set the precedent for what an artist could do with just one color.



Jane Tulley 09:21 AM

Great answer! I'd love to learn more about Picasso's work!

reply



Summary

Given the importance of reading in general and vocabulary development specifically, coupled with the gaps in vocabulary knowledge evidenced by many, it is now widely accepted that vocabulary development become an essential ingredient of academic and vocational planning efforts in the area of literacy. With careful planning and curricular support, teachers can provide the kinds of robust vocabulary instruction needed to improve the vocabulary and corresponding comprehension skills of all students across the primary, intermediate, and high school grades.

Wordly Wise i3000 provides online, sequential, and systematic vocabulary instruction across Levels 2–12. Teachers can support and help differentiate student learning. Given the relationship between vocabulary and comprehension, it is critical to focus on vocabulary instruction across the grades. *Wordly Wise i3000* utilizes best practices in vocabulary instruction including (a) a focus on Tier Two general academic vocabulary; (b) assessment practice similar to what is found on standardized tests; (c) instruction on 3,000 words (throughout Levels 2–12); (d) inclusion of multi-tier instructional support shown to be effective with a wide range of learners; and (e) robust vocabulary instruction. These best practices are delivered online; teachers have flexible options to guide and oversee student participation in these online lessons in real time.

Wordly Wise i3000 includes several important features of robust vocabulary instruction. First, self-assessment is used to bring students into the assessment process from the start. Second, students participate in rich active learning opportunities that provide them with clear instructional routines. Third, student-friendly definitions are used to ensure word meaning is clear and enhance learning. Fourth, multiple and varied exposures and review opportunities engage students in ways that promote deep learning. Fifth, students learn important words with a focus on context-based practice. Finally, motivational activities abound that hook students and keep them on task and learning at high levels. Online learning is the key to student success in this 21st-century program.



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