Literacy Solution
Grades 4–6

REWARDS®

EVIDENCE-BASED SUPPORT FOR *REWARDS INTERMEDIATE*

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EVIDENCE-BASED SUPPORT FOR *REWARDS INTERMEDIATE*

REWARDS® Intermediate is both an evidence-based and research-validated program. In the first segment of this review, research that validates the program's effectiveness in a variety of settings with a variety of learners is examined. In the second segment, the strands of the program and supporting evidence for each strand are described. In addition, a short review of explicit instruction, the instructional approach used to optimize student learning, is provided.

CONCLUSIONS FROM AUTHORS AND INDEPENDENT RESEARCHERS

Numerous studies have validated the effectiveness of *REWARDS*, some initiated by the authors as part of product development and others by outside researchers. These studies reached a number of conclusions:

1. The *REWARDS* multisyllabic word reading strategy is effective in improving students' ability to decode unknown long words,
2. instruction using the *REWARDS* reading program yields significant growth in decoding and reading rate (fluency),
3. *REWARDS Intermediate* is effective as part of a Tier 2 or Tier 3 RTI (Response to Instruction and Intervention) initiative
4. *REWARDS* has been successfully implemented in rural, suburban, and urban communities,
5. *REWARDS* is effective when used with students who have been designated English Language Learners at some point in their school history,
6. *REWARDS* is an effective intervention for students with learning disabilities and for other struggling readers, and
7. *REWARDS Intermediate* can be used as a whole class intervention, benefiting students at all reading levels (intensive, strategic, and benchmark).

RESEARCH CONDUCTED BY *REWARDS* AUTHORS

Various versions of the *REWARDS* program have been field tested and used widely with poor readers and students with reading disabilities. Before any formal studies were conducted, data were collected in several field tests and in at least four pilot studies. Using the grade equivalent (GE) scores of two subtests from the *Woodcock Reading Mastery Tests* (Word Attack and Word Identification) (Woodcock, 1973), substantial gains in short periods of time were documented. In approximately five weeks, some students gained as little as one year's worth of reading, while other students showed a gain that was equivalent to eight years on the Word Attack subtest. Archer (1981) found in the pilot studies that flexible syllabication procedures focusing on vowel sounds (e.g., *ai, ea, ou*), word parts, vowel conversions, and approximate pronunciations—in conjunction with a word building strategy that taught students to break longer words down into smaller recognizable word parts, read part by part, then read the whole word—were effective in teaching low-performing fourth and fifth grade students to read multisyllabic words.

To validate the strong field-test and pilot-test results and confirm that the intervention was responsible for the results, two studies were completed using previous versions of the *REWARDS* program as the intervention. In the first study, the experimenter tried three versions of *REWARDS* and compared them with a program not specifically designed to teach multisyllabic words. In the second study, different versions of the *REWARDS* program were implemented requiring different success levels for different groups (80% versus 90%) and providing different practice modes (sentences versus whole paragraphs). Each study is described briefly below.

Archer, A. L., Gleason, M. M., Vachon, V., & Hollenbeck, K. (2006). *Instructional strategies for teaching struggling fourth and fifth grade students to read long words.* Unpublished manuscript.

In the first experimental study, fourth and fifth graders were nominated by their teachers as reading-deficient and randomly assigned to one of three treatment groups or one control group. Participants' reading scores on the Word Identification and Word Attack subtests of the *Woodcock Reading Mastery Tests* (Woodcock, 1973) ranged from 2.7 to 3.5 grade equivalent on the first subtest and 2.5 to 3.8 grade equivalent on the second subtest. In addition, participants were decidedly deficient in decoding multisyllabic words. On a multisyllabic word reading pretest, students ranged from 2 correct responses to 13 correct responses out of 48 words.

Each of the three treatment groups engaged in the same instruction during the first half of the intervention. The three groups received 30 minutes of preskill instruction for nine days. The preskills taught were:

a. blending of word parts from an orally segmented model presented by the teacher;
b. saying isolated vowel sounds for vowel letter combinations;
c. vowel conversions;
d. circling vowel graphemes in words and saying the phonemes for the graphemes;
e. silently sounding out and orally reading word parts;
f. correcting close approximations using context;
g. pronunciation of affixes in isolation; and
h. locating and reading affixes by circling and pronouncing word parts found at the beginning and end of words.

After preskills training, a criterion test (Preskill Posttest) was administered to measure the level of mastery that

occurred across the three treatment groups and to ensure that similar levels of attainment occurred for the groups but not for the control group (which did not receive preskill training). The groups then received an additional nine days of instruction followed by administration of the posttest measures, similar to those included in the *Teacher's Guide for REWARDS Intermediate*. The posttest measures required students to read three- and four-syllable words in isolation and in sentences.

During the additional nine days of instruction, the three groups and the control group received different kinds of instruction. The Preskill Training Only group continued to work 30 minutes a day with the teacher. They received five minutes of review on three preskills taught during the initial training: pronouncing vowel combinations, saying the letter sound or name for single-letter graphemes (vowel conversions), and pronouncing prefixes and suffixes. This was followed by instruction in lessons from a commercial program, in which students practiced reading word lists and passages that consisted primarily of monosyllabic words.

The second group, the Strategy Training group, received 30 minutes of instruction a day on how to apply the *REWARDS* strategy while decoding individual multisyllabic words as well as these words in sentences. The strategy required students to put together the separate skills taught during the initial nine days of the study (preskill training). The strategy involved the following steps:

a. segmenting the word into decodable parts by locating and circling word parts at the beginning and end of the word (prefixes and suffixes);
b. orally reading these affixes;
c. locating and underlining vowel graphemes in the middle parts of the word;
d. reading the vowel sounds;
e. segmenting by reading all words part by part;
f. blending by saying the whole word; and
g. correcting the pronunciation of the word if necessary.

Student participation in this condition included watching the teacher model word reading, engaging in guided practice of reading similar words, and independently applying the strategy to more and more difficult review words, novel words, and words embedded in sentences. Over the course of the nine days, overt use of the strategy was reduced and covert strategy use was increased by both teachers and students.

The last group, the Word Build-Up group, did not use all eight preskills introduced during the nine days of strategy training. Unlike the Strategy Training group, students did not independently segment a word into decodable parts; that is, they did not locate and circle affixes or locate and underline vowel graphemes or pronounce vowel sounds. Instead, the instructor indicated decodable parts in the word by putting a dot between the word parts. This visual partitioning was done by the teacher during both teacher modeling and guided practice. Affixes and vowel sounds were not pronounced orally by teachers or students, but students did read each of the words part by part, blend the parts by saying the whole word, and correct their pronunciation to match oral/aural language or the sentence context. As in the Strategy Training group, students watched the teacher model word reading, engaged in guided practice, and independently applied the strategy to review words, novel words, and words embedded in sentences. Again, as in the Strategy Training group, the gradual fading of prompts occurred. Thus, the Strategy Training and Word Build-Up strategies were two variations of a strategy for reading longer words.

Subjects in the monosyllabic training condition served as the control group. They received 30 minutes of instruction from a commercial program for each of the 18 days. The program being used did not focus on teaching students to read multisyllabic words; instead, it was designed to bring students to mastery on phonetic and structural analysis skills, which are prerequisite skills for reading multisyllabic words.

Statistically significant differences in reading skills were observed on criterion measures of multisyllabic word reading (three- and four-syllable words) and multisyllabic word reading in sentences for students who were directly taught the two variations of the strategy that is now embedded in the *REWARDS* program. Students in the two strategy groups (Strategy Training and Word Build-Up), who read an average of approximately 8 out of 48 multisyllabic words on the pretest, were able to read an average of 31 out of 48 words after learning the strategy. In contrast, students who were not taught the strategy, but worked instead on preskills, read an average of approximately 14 out of the 48 words by the end of the study. In addition, performance on the Word Identification and Word Attack subtests of the *Woodcock Reading Mastery Tests* (Woodcock, 1973) indicated that specific instruction related to multisyllabic word reading increased students' general word recognition skills.

Comparing the scores of the two strategy groups before and after the study shows that, on average, students who were reading at second- and third-grade levels before they learned the strategy could read at the fourth-grade level afterward. Though standardized measures are not expected to be as sensitive to the effects of short-term treatments, they do provide information on students' abilities to read real and nonsense words of graduated difficulty. And, because of the controlled research design, the results of the study can be attributed to the intervention. This attribution was also confirmed by the fact that students in the control group, who received a structured monosyllabic approach to reading, did not make significant gains. These results suggest that students significantly benefit when taught the necessary decoding preskills as well as the strategies for recognizing word parts in a flexible manner (versus following strict syllabication rules) and using the word parts to put together a whole word.

Vachon, V., & Gleason, M. M. (2006). *The effects of mastery teaching and varying practice contexts on middle school students' acquisition of multisyllabic word reading strategies.* Unpublished manuscript.

The purpose of this study was to examine the effects of mastery learning on multisyllabic word reading component skills and the effects of practice context on word and text reading skills of middle school students (sixth, seventh, and eighth grade) with reading deficiencies, including students with learning disabilities (LD). A factorial design was used to examine the effects of mastery and context. Sixty-five subjects, including 25 students with LD, were matched according to oral reading fluency and then randomly assigned to one of four treatment conditions (groups): high mastery/passage, high mastery/sentence, low mastery/passage, and low mastery/sentence. Participants' reading scores on the Word Identification and Word Attack subtests of the *Woodcock Reading Mastery Tests* (Woodcock, 1973) ranged from 3.0 to 5.0 grade equivalent on the two subtests. In addition, on a multisyllabic word reading pretest, students averaged 20 correct responses out of 36 words, slightly higher than the fourth- and fifth-grade students in the first study. In social studies passages, these students read an average of 73 correct words per minute with an average of 7 errors.

Over the course of seven weeks, groups learned and practiced multisyllabic word reading strategies for 40 minutes a day using an earlier version of the *REWARDS* program. Some groups completed 18 lessons while others completed fewer. Each lesson took from one to three days to complete. After another eight weeks, students were given maintenance tests, bringing the research study to a duration of 15 weeks.

For the first nine lessons, high-mastery groups were required to achieve scores of 90% or higher on daily probes of component skills in order to progress to the next lesson. The high-mastery groups *achieved* a 95% level on daily probes. Low-mastery groups progressed regardless of probe performance. But, in spite of being called low-mastery, their mastery level, according to probe data, was calculated as 85%.

On the last nine lessons, groups progressed at a lesson per day and practiced reading either social studies passages or those same passages arranged as randomly numbered sentences. The passages were drawn from grade-appropriate social studies textbooks. It was hypothesized that a high component skill mastery would result in stronger word identification skills, and that passage practice would result in higher gains in oral reading fluency and in stronger transfer to science text reading skills. Word identification skills were measured

by standardized and criterion measures. Oral reading fluency was measured as correct words per minute in the social studies text and later in the science text.

Students from both high- and low-mastery groups made statistically significant gains in word and text reading skills, accompanied by a significant decrease in errors. Over the course of 15 weeks, regardless of the assigned intervention condition (group), students made statistically significant gains in their ability to decode multisyllabic words and in their ability to apply the strategy of identifying word parts when encountering unfamiliar words. However, no significant differences were observed between the high- and low-mastery groups on any index of word reading ability during post or maintenance testing. In other words, it didn't matter whether the mastery level they demonstrated while learning the strategy was 85% or 95%, as long as students kept practicing and reviewing the skills (demonstrating at least 80% mastery level before moving on to new lessons). Similarly, oral reading fluency was comparable for passage and sentence reading for both groups on posttest and maintenance measures, indicating that it didn't matter if students practiced reading multisyllabic words in sentences or in passages. Either way, their oral reading fluency improved significantly from pretest to maintenance test. On average, students gained 14 correct words read per minute. Students who were reading within a range of 40 to 95 words per minute before the study were now reading between 45 and 122 words per minute after the study. Overall errors decreased by 2.4 words or 36%, and multisyllabic word reading errors decreased by 1.8 words or 38% from pretest to maintenance test.

On criterion measures that required students to read lists of three-, four-, and five-syllable words, students read substantially better at the end of the study than at the beginning. By the end of the study, they read more total multisyllabic words and more word parts within multisyllabic words, even if they couldn't read the total word. They also read more fluently, as denoted by a substantial gain in correct words and word parts read per minute. Students read a mean of 26 out of 36 multisyllabic words correctly. They read 126 out of 144 word parts correctly, and they read 75 word parts per minute (compared with 59 word parts per minute at the beginning of the study).

In addition, by the second half of the intervention, students began making only an average of 2.3 errors per 100 words of connected text. This was due largely to learning the preskills in the first nine lessons and beginning to use the entire *REWARDS* strategy each time they came to a multisyllabic word within a social studies passage. However, students still needed help when they couldn't apply the strategy. Each time they made an error, the teacher briefly prompted students by reminding them to use what they had learned from the first nine lessons. In response to the brief strategy prompt, students on average successfully corrected 50% of their multisyllabic word reading errors, which brought them, by the end of the study, to a 98% to 99% level of reading success in grade-level social studies material. When they couldn't apply the strategy, the teacher gave more structured prompts similar to those given in the first nine lessons. In addition to reading well in social studies text, students demonstrated transfer of this oral reading accuracy to grade-level science text.

Gains for special education and low-ability students were statistically comparable to the group as a whole, thus demonstrating that the *REWARDS* program would benefit a range of diverse learners with reading problems. Only a few individual students needed more work on basic phonetic skills before participating in the program. A stronger phonetic foundation would have assisted them in benefiting from the program more than they did.

The *REWARDS* program provides students with the necessary decoding preskills, a highly generalizable strategy for reading longer words, and the practice necessary to read words, sentences, and passages in various subject areas successfully and independently. The two research studies cited describe successful use of this program with low-performing fourth- and fifth-grade students and with sixth-, seventh-, and eighth-grade students with reading deficiencies (as defined by rate and accuracy measures). The second study also demonstrated that learning to read with the *REWARDS* program transfers to successful reading of the kinds of passages encountered in general education textbooks.

RESEARCH CONDUCTED BY INDEPENDENT RESEARCHERS

Shippen, M. E., Houchins, D. E., Steventon, C., & Sartor, D. (2005). A comparison of two direct instruction reading programs for urban middle school students. *Remedial and Special Education, 26*(3), 175-182.

This study examined the differential effects of two direct instruction (DI) programs, one with overt decoding strategies (*REWARDS Secondary*) (Archer, Gleason, & Vachon, 2005) and one with more covert decoding strategies (*Corrective Reading Decoding*) (Engelmann & colleagues, 1999), on the reading performance of struggling middle school students (7th graders) who were 2 to 4 years behind in reading achievement according to standardized pretests. Seventy-eight inner-city students were pretested, but, because of attrition, data for fifty-five students were reported at the conclusion of the study; 95% were general education students and 5% were identified as students with mild disabilities.

Over 100 students were given the pretest measures to determine eligibility. The *Test of Word Reading Efficiency (TOWRE)* measures phonemic decoding efficiency, sight-word reading efficiency, and overall word reading efficiency and the 4th edition of the *Gray Oral Reading Test (GORT-4)* measures reading rate, reading accuracy, reading fluency, and reading comprehension as well as yielding an overall oral reading quotient. The *Corrective Reading* placement test was administered to all students to see who would place into one of the program levels, either Level B2 (Engelmann, Johnson, Carnine, Meyer, Becker, & Eisele, 1999) or Level C (Engelmann, Meyer, Johnson, & Carnine, 1999). (The program also includes Levels A and B1, which do not include multisyllabic word reading). The seventh grade had the largest number of students placing into the targeted levels of *Corrective Reading*.

After determining that students were two or more years below reading achievement levels and placing into Levels B2 or C of the *Corrective Reading* program, students were randomly assigned to conditions. That is, of the 55 students who were still in the study at the end, the 29 who placed into Level B2 (n=29) were randomly assigned to Level B2 of *Corrective Reading* (n=13) or to the *REWARDS* program (n=16). The 26 who placed into Level C (n=26) were randomly assigned to Level C of *Corrective Reading* (n=12) or to the *REWARDS* program (n=14).

The treatment was implemented for six weeks, with 30 daily instructional sessions lasting approximately 55 minutes. Four general education teachers from the middle school who taught science, social studies, math, and language arts were trained to teach their respective programs (two teachers for *Corrective Reading*; two teachers for *REWARDS*) with fidelity.

Results indicate that all students, regardless of overt or covert DI programs, made significant gains in all areas of reading tested; a differential effect was found only for reading rate. Students who began the study reading at fourth-grade level (initially placing into *Corrective* C) progressed more rapidly than students beginning at third-grade level (initially placing into *Corrective* B2).

Zurybida, P. M. (2007). *Learning together, but differently: Understanding the impact and implications of a whole group reading intervention.* Unpublished doctoral dissertation, University of Washington, Seattle.

This study, which used quasi-experimental methods, examined the efficacy of whole class implementation of *REWARDS Intermediate* (Archer, Gleason, & Vachon, 2006) with all (137) fourth graders in three elementary schools in a small Washington State community. The effect of the whole class instruction was examined for the entire group and also for three subpopulations: low-performing students (intensive), middle-range students (strategic), and high-performing students (benchmark). These subpopulations were established using *DIBELS®* (*Dynamic Indicators of Basic Early Literacy Skills*) (Good & Kaminski, 2002) scores on oral reading fluency that were obtained before the intervention was initiated. All other measurement tools used in the study were from the *REWARDS Intermediate* Teacher's Guide: (a) Multisyllabic Word Reading Pretest/Posttest (total correct words and total correct word parts), (b) Multisyllabic Word Reading Generalization Test, and (c) Reading Fluency Pretest/Posttest.

This study addressed a number of questions regarding whole group implementation of *REWARDS Intermediate*: Does accuracy on reading multisyllabic words improve? Does fluency (rate) improve? Do gains persist nine weeks after instruction ends? Which group of students (intensive, strategic, or benchmark) benefits most from participation in *REWARDS Intermediate*? The study's results are summarized for each question.

Does accuracy on reading multisyllabic words improve? The changes from pretest to posttest on correctly read word parts (syllables) were dramatic. The lowest performing students made the most gains, gaining an average of 22.4 word parts, moving from 60% accuracy to 88% accuracy on the 78 word parts. The strategic students gained an average of 14.29 word parts, moving them to 95% accuracy. The highest performing students made more progress than expected given that they were already fairly proficient decoders. This benchmark group gained an average of 8.24 word parts, moving from an average of 87% accuracy to 98% accuracy. The whole group increased an average of 13.28 word parts to an average of 95% accuracy.

Does fluency (rate) improve? Overall, the whole group increased 14.63 correct words per minute (cwpm) during the five-week intervention period. This gain exceeded the grade-level standards set for "realistic" gain in correct words per minute (.85 words per week) and "ambitious" gain (1.1 words per week) developed by Fuchs, Fuchs, Hamlett, Walz, & Germann (1993). When examined separately, each group of students also exceeded the standards. The benchmark students gained an average of 18.38 cwpm, the strategic students gained an average of 14.42 cwpm, and the intensive students gained 7.32 cwpm.

Do gains persist nine weeks after instruction ends? A drop in students' ability to accurately decode multisyllabic words was expected due to the time lapse of nine weeks and no daily practice of either the underlying preskills or the multisyllabic word reading strategy. While there was a drop in accuracy in reading multisyllabic word parts, it was much smaller than projected. On the posttest, the lowest performers (intensive group) decreased an average of 2 word parts, from 69 out of 78 to 67 accurate word parts. The strategic students, the group for which *REWARDS* was designed and initially validated, experienced the smallest loss, losing only .33 of a word part. The highest performing students lost an average of 1.36 word parts after nine weeks.

A one-minute rate measurement was also included in the nine-week generalization assessment. The author expected that all students would continue to increase their oral reading rates at a realistic pace of .85 words per week. However, the gains in reading rate were much greater than expected. During the nine weeks when they were no longer engaged in the intervention, the whole group increased by an average of 15.73 cwpm. The benchmark students and the strategic students had very similar gains in fluency, increasing an average of 16.76 and 16.79 cwpm respectively. The intensive students increased by an average of 12.64 cwpm.

Which group of students (intensive, strategic, or benchmark) benefits most from participation in REWARDS Intermediate? The researcher concluded that the *REWARDS Intermediate* reading program was effective when implemented in large group, heterogeneous fourth-grade classrooms and benefited all levels of readers, though in different ways. Middle range students (strategic) made large gains in reading rate and multisyllabic word reading accuracy. Low performing students (intensive) made substantial gains in word reading accuracy, while the higher performing students (benchmark) dramatically increased their reading rate.

Gowan, D. W. (2006). REWARDS: *Structural analysis as an effective means for decoding multisyllabic words. Unpublished master's thesis*, California State University, Fullerton.

The purpose of this study was to evaluate the effectiveness of *REWARDS* when used as an intervention with sixth graders designated with learning disabilities. A quasi-experimental pretest-posttest non-randomized control group research design was used in which 10 students received *REWARDS Secondary* instruction (Archer, Gleason, & Vachon, 2005), while the 10 students in the control group remained in their general education reading class. Two instruments were administered as pretests and posttests: the *Basic Reading Inventory* (BRI)

(Johns, 2001), which yields independent, instructional, and frustration reading levels, and the *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS) (Good & Kaminski, 2002), a measure of oral reading fluency. Using the BRI instructional levels, DIBELS passages at each student's independent reading level were determined.

Students receiving *REWARDS* training showed significant gains in decoding (a gain of 1.73 grade equivalent vs. a gain of 0.08 grade equivalent for the control group), in instructional reading level (a gain of 1.45 grade equivalent vs. a gain of 0.3 grade equivalent for the control group), and reading fluency (11.48 correct words per minute gain vs. 1.29 cwpm gain for the control group on grade-level passages).

While the gains for students receiving five weeks of instruction in *REWARDS* appear to be significant, the limitations of the study were numerous, including: (a) small group size, (b) non-randomization of control and intervention groups, and (c) differences in reading ability between the two groups with the control group consisting of significantly higher readers.

Graves, A. W., Duesbery, L., Pyle, N. B., Brandon, R. R., & McIntosh, A. S. (2011). Two studies of Tier II literacy development: Throwing sixth graders a lifeline. *The Elementary School Journal, 111*(4), 641-661.

These two studies investigated the efficacy of a highly structured intervention curriculum for struggling readers entering sixth grade in an urban middle school. In both experimental studies, *REWARDS Intermediate* (Archer, Gleason, & Vachon, 2006) was bundled with two other programs to form the intervention curriculum.

Both studies were conducted at a culturally diverse, inner-city middle school where 95% of the students were identified as English Language Learners at some point in their school history. The participants in both studies had performed at the "below basic" or "far below basic" levels on the California Language Arts Standards Test at the end of fifth grade. In both studies, participants were randomly assigned to either the intervention or the control condition. Intervention students were then placed in homogeneous groups based on pretest data, which included a test of oral reading fluency using passages obtained from the EasyCBM website (EasyCBM, 2009), a Maze test of reading comprehension obtained from the AIMSweb website (AIMSweb, 2009), and a test of vocabulary.

Students placed in the Tier 2 intervention condition received small group instruction (three students) three times a week for one hour for at least 10 weeks. Students received: (a) 20 minutes of basic decoding instruction if they read lower than a 2.5 reading level, or 20 minutes of advanced decoding instruction using *REWARDS Intermediate* if they had a 2.5 reading level or higher, (b) 20 minutes of fluency development using Read Naturally (Ihnot, Matsoff, Gavin, & Hendrickson, 2001), and (c) 20 minutes of comprehension and vocabulary instruction using *Daybook of Critical Reading and Writing* (Spandel, Nathan, & Robb, 2001).

In Study 1, significant differences were found on the measures of oral reading fluency while the differences on the vocabulary and the Maze comprehension measures were not significant. The intervention group grew from a mean of 88.7 words per minute (wpm) to 106.8, a gain of about 18 wpm. These wpm gains far exceeded the one-word gain per week expectation for oral reading progress (Fuchs, Fuchs, Hamlett, Walz & Germann, 1993; Silberglitt & Hintze, 2007). In contrast, the control group grew by about 1.0 word per minute.

In Study 2, significant differences were again found on reading fluency. The intervention group had a gain of 21.6 wpm while the gain for the control group was 0.2 wpm. No significant differences were found on the vocabulary measure or Maze comprehension measure. However, there was a significant difference between the intervention and control group on the passage comprehension subtest of the *Woodcock Reading Mastery Tests – Revised* (Woodcock, 2003).

The authors concluded that Tier 2 instruction that included a balance of word analysis, fluency building, comprehension, and vocabulary instruction had a significant impact on struggling readers in sixth grade. However, they were unable to determine which components of the bundled intervention contributed the most to student success.

LITERATURE REVIEW

The following strands of reading instruction are addressed in *REWARDS Intermediate*: decoding, encoding, fluency, vocabulary, and comprehension. Decoding of multisyllabic words and fluency (rate development) are the dominant strands, which is why the *REWARDS* acronym stands for Reading Excellence: Word Attack and Rate Development Strategies.

Decoding of Multisyllabic Words. Decoding refers to the use of letter-sound associations, structural elements such as prefixes and suffixes, and patterns within words to determine the pronunciation of unknown words. Even though decoding is not sufficient for comprehension, it is nevertheless necessary, for, according to Torgesen, there is no comprehension strategy powerful enough to compensate for the inability to read printed words (2004).

Given the importance of decoding skills to reading comprehension, it is unfortunate that many students lack the decoding skills needed to read and comprehend grade-level text. In fact, many researchers have concluded that poorly developed word recognition skills are the most pervasive and debilitating source of reading challenges (Adams, 1990; Perfetti, 1985; Share & Stanovich, 1995; Shippen, Houchins, Steventon, & Sartor, 2005). Poor decoders, even those who can decode single-syllable words, have a difficult time with multisyllabic words (Just & Carpenter, 1987). Good and poor readers often have different approaches to decoding unknown long words: Good readers break words into syllables while poor readers routinely attempt to process words letter by letter (Bhattacharya, 2006). In addition, lower decoders are more likely to mispronounce affixes and vowels, to disregard large portions of letter information, and are two to four times as likely to omit syllables (Shefelbine & Calhoun, 1991). This challenge is amplified in the intermediate and secondary grades when students are faced with approximately 10,000 words a year they have never seen in print (Nagy & Anderson, 1984). Most of these words have two to five syllables (Cunningham, 1998). Although multisyllabic words do not make up all the words that students read, they do carry most of a passage's meaning, particularly in informational text, as evidenced in this example: *Condensation is the transformation of the physical state of matter from gaseous phase into liquid phase and is the reverse of vaporization*. A student who is unable to decode a passage's long words has no pathway to reading comprehension.

In the past, the major instructional approach to multisyllabic words was teaching students complex syllabication rules for dividing words into dictionary syllables. More recently, instruction has moved away from rigid rule application to more flexible decoding strategies (Archer, Gleason, & Vachon, 2003) because a relationship between syllabication knowledge and successful reading has not been established (Canney & Schreiner, 1977), and the time to teach the rules is extensive. In this vein, *REWARDS Intermediate* teaches a flexible strategy in which students break long words into decodable chunks utilizing two elements within the words: (a) the affixes, and (b) the vowels in the remaining word parts. In the overt strategy, students circle the prefixes and suffixes and underline the vowels, read the parts of the word, blend those parts into a word, and, finally, correct the word's pronunciation if the students' pronunciation is not a real word or is not consistent with the context.

A number of studies have demonstrated that it is not too late for struggling older readers to learn to read multisyllabic words and to improve their overall reading ability. Working with fourth and sixth graders, Shefelbine (1990) found that students made significant gains when taught to use affixes and vowels to decode longer words. In a secondary study, seventh, eighth, and ninth graders who were taught a decoding strategy for reading long words had fewer oral reading errors and increased comprehension (Lenz & Hughes, 1990). Bhattacharya and Ehri (2004) showed that students' ability to read multisyllabic science terms improved over time as a result of syllable segmentation training.

Encoding (Spelling). Encoding, or spelling of words, relies on the same information as decoding: (a) knowledge of letter-sound associations, and (b) structural elements, including prefixes and suffixes (Ehri, 2000). Thus, decoding and encoding are reciprocal processes: When decoding is taught and practiced, spelling is strengthened and, when spelling is explicitly addressed, decoding is strengthened (Moats, 2005). As Snow, Griffin, and Burns (2005)

concluded, "Spelling and reading build and rely on the same mental representation of a word. Knowing the spelling of a word makes the representation of it sturdy and accessible for fluent reading" (p. 86). For these reasons, in *REWARDS Intermediate*, students read and spell multisyllabic words in each lesson and learn a strategy that can be generalized to what they would do when spelling long words independently:

1) Say the parts of the word,
2) Write the parts of the word,
3) Examine the written word and, using visual memory, verify that the word is spelled correctly, and
4) Correct the spelling of the word if it appears to be incorrect.

Fluency (Rate). Fluency refers to the quick and effortless reading of words presented in a list or within connected text (Kuhn & Stahl, 2003). Fluency, consisting of three key elements, includes the student reading **accurately** and with appropriate reading **rate** and **expression** (Hudson, Lane, & Pullen, 2005). *REWARDS Intermediate* focuses primarily on accuracy and appropriate rate.

Reading fluency is important for many reasons, but the most often stated reason is the relationship between fluency (rate) and comprehension. This relationship is often explained using information processing theory (LaBerge & Samuels, 1974). Human beings have limited cognitive resources in terms of attention and short-term memory. When reading, students must direct their cognitive energies toward recognizing the printed words (decoding) and constructing meaning (comprehension). When decoding is slow and laborious, students' cognitive energies are drawn away from meaning, thus compromising their comprehension (National Reading Panel, 2000). Both empirical and clinical research support the relationship between fluent oral reading and overall reading ability, including comprehension (e.g., Cunningham & Stanovich, 1998; Fuchs, Fuchs, & Maxwell, 1988; Gough, Hoover, & Peterson, 1996; Jenkins, Fuchs, Espin, van den Broek, & Deno, 2000; Rasinski, Padak, Linek, & Sturtevant, 1994).

There are many pragmatic reasons for increasing reading rate. When reading is slow and laborious, struggling readers select not to read (Moats, 2001). The consequences of not reading are immense. These struggling students are not making the gains in decoding and fluency that their avid reading peers experience. In addition, they are not gaining background knowledge and vocabulary, which are gifts attributed to voracious reading. As Stanovich (1993) concluded, the extent to which students spend their time reading generally translates into learning new words, new meanings, new linguistic structures, and new ways of thinking. Finally, from a very practical view, struggling readers with low reading rates will take significantly more time to complete assignments. For example, if a student who reads 150 correct words per minute completes a reading assignment in one hour, a student reading 50 correct words per minute will require three hours to complete the same assignment.

A number of methods have been incorporated into *REWARDS Intermediate* to accelerate gains in reading rate. First, students are taught decoding skills so that they can quickly decode unknown words. Second, practice is provided in reading words more quickly by having students reread lists of words that they have accurately decoded. Finally, students engage in repeated reading exercises in which they read a portion of a previously read passage for one minute and determine the number of words read. This practice routine is repeated one or two times as students attempt to increase their reading rate. Numerous studies have supported the use of repeated readings to increase the reading rate of students at many reading levels and ages (e.g., Dowhower, 1994; Fleisher, Jenkins, & Pany, 1979; Herman, 1985; Homan, Klesius & Hite, 1993; Mercer, Campbell, Miller, Mercer & Lane, 2000; Meyer & Felton, 1999; O'Shea, Sindelar & O'Shea, 1985, 1987; Rashotte & Torgesen, 1985; Rasinski, 1990; Sindelar, Monda, & O'Shea, 1990). In sum, after completing a comprehensive review of fluency intervention studies conducted in the past 25 years, Chard, Vaughn, and Tyler (2002) concluded that having students with learning disabilities engage in repeated reading activities is associated with improvement in reading rate, accuracy, and comprehension.

Vocabulary. Vocabulary is the knowledge of words and their meanings (Honig, Diamond, & Gutlohn, 2008). As you would expect, there is a strong correlation between knowledge of vocabulary and reading comprehension, particularly as students progress up the grades. Unfortunately, children that come from homes of poverty already differ significantly in vocabulary from their peers raised in middle class homes even before they arrive in school (Hart & Risley, 1995). For example, Hart and Risley estimated the average vocabulary of four-year-olds in homes of professionals to be 1,100 words while the children in homes of poverty had a lexicon of 500 words—an astonishing difference. By first grade, the vocabulary gap is even greater. Linguistically "poor" first graders know an average of 5,000 words while linguistically "rich" first graders know an average of 20,000 words (Moats, 2001). The vocabulary knowledge of students who enter school with limited vocabularies grows much more discrepant over time compared to their peers who have rich vocabulary knowledge (Baker, Simmons, & Kame'enui, 1997). This disparity in vocabulary extends into secondary schools. Vocabulary knowledge is particularly limited for students who are struggling readers, as they are the ones who fail to gain vocabulary from independent reading.

Given vocabulary's importance to reading comprehension especially, but also its importance to listening comprehension and to word choice in writing, vocabulary building must be emphasized every school year, in all classes, every day. For this reason, the vocabulary strand in the Second Edition of *REWARDS Intermediate* has been significantly expanded, incorporating a number of proven practices.

First, explicit instruction is provided on selected words, a practice that consistently accelerates vocabulary growth (White, Graves, & Slater, 1990). These are general academic vocabulary words, which are words that students will encounter in many classes. These words are directly taught using an instructional routine that is similar to those proposed by other authors (e.g., Beck, McKeown, & Kucan, 2002; Biemiller, 2001; Carnine, Silbert, Kame'enui, & Tarver, 2009; Honig, Diamond, & Gutlohn, 2008; Marzano & Pickering, 2005). The instructional routine is:

1) Introduce the word,
2) Provide a student-friendly explanation,
3) Illustrate the word with examples,
4) Check for student understanding.

Teachers also have the choice to augment this basic instructional routine by introducing the word's part of speech, exploring synonyms and antonyms, and expanding instruction to other members of the "word family." Nagy and Anderson (1984) and other researchers suggest that teachers expand instruction beyond the target word to words that are related morphologically and semantically (e.g., the word family for *stable* could include *unstable*, *stabilize*, *stabilized*, *stabilization*, *stability*, and *instability*). To better ensure mastery in *REWARDS Intermediate*, multiple exposures to vocabulary terms are provided with built-in cumulative review.

Second, before passage reading occurs, students learn *domain-specific vocabulary* words, which are words that are directly related to the content-area domain emphasized in the passage. The meanings of these words are introduced and practiced. Research shows that students who receive systematic, direct teaching of critical passage words show improvement in passage comprehension (McKeown, Beck, Omanson & Pople, 1985; Stahl & Fairbanks, 1986).

To strengthen the vocabulary instruction for all students, but particularly English Language Learners, the concepts and examples are also illustrated with photos.

In addition to directly teaching selected academic vocabulary and domain-specific vocabulary, students are also taught two word-learning strategies that can be employed to determine the meaning of unknown words embedded in connected text. One word-learning strategy involves teaching students the meanings of high frequency prefixes and suffixes, selected because their meanings are unambiguous (*e.g., re = again, un = not*). Twenty prefixes account for 97% of prefixed words; four of the twenty (*un, re, in* or *im, dis*) account for 58% of

prefixed words (White, Sowell, & Yanagihara, 1989). The other word-learning strategy is the use of context clues, which is practiced during sentence and passage reading. Simple practice in inferring word meanings was used rather than teaching specific context-clue types (Kuhn & Stahl, 1998). The combined use of these two strategies (morphemic analysis plus contextual analysis) best supports older readers in determining the meaning of unknown words (Baumann, Font, Edwards, & Boland, 2005).

Comprehension. Comprehension, the act of extracting what the author has explicitly and implicitly stated and constructing meaning, is the goal of all reading instruction. Comprehension will be enhanced if students can (a) decode the unknown words quickly within a passage, (b) read the text effortlessly, and (c) understand the critical passage vocabulary. All of the strands in *REWARDS Intermediate* contribute to reading comprehension.

While the passage reading exercises in the last six lessons of the program are primarily designed to give students practice reading multisyllabic words within grade-level passages, the exercises are also designed to provide teachers with a model for informational text reading that can be transferred to other materials. Informational, rather than narrative, passages are used in the program because success in all content-area classes requires facility with informational text (Neufeld, 2005). The Common Core State Standards of English and Language Arts call for close reading of this type of text. The literature includes many suggested strategies for close reading (Hinchman & Moore, 2013); teachers must select a method that matches the text, the readers, and the content domain. Before students read the passages in *REWARDS Intermediate*, a judicious amount of front-loading is provided (just enough instruction on vocabulary and background knowledge to support comprehension, but not so much that passage reading is unnecessary). Then a close reading procedure is implemented in which students read a passage segment twice and respond to questions. Teachers decide whether to ask scaffolding questions before the higher-order question or to ask only the higher-order question, which requires the integration of evidence from the passage. The higher-order questions are text-dependent and have been carefully designed to support formulation of logical, evidence-based answers.

Explicit Instruction. While careful selection of content is critical in accelerating students' growth in reading, use of effective pedagogy is also necessary. For this reason, explicit instruction, which is unambiguous instruction in which information is presented directly, is utilized. Numerous researchers and educational writers have identified the instructional behaviors of explicit instruction, which include both the design and the delivery of instruction (e.g., Archer & Hughes, 2011; Brophy & Good, 1986; Christenson, Ysseldyke, & Thurlow, 1989; Gersten, Schiller, & Vaughn, 2000; Hattie, 2009; Hughes, 1998; Marchand-Martella, Slocum, & Martella, 2004; Rosenshine, 2012; Rosenshine, 1997; Rosenshine, 1995; Rosenshine & Stevens, 1986; Simmons, Fuchs, Fuchs, Mathes, & Hodge, 1995; Swanson, 1999, 2001). In terms of design, the following guidelines were used in *REWARDS Intermediate*:

1) Instruction should be organized and focused,
2) Instruction on skills and strategies should include demonstration (I do it.), guided practice (We do it.), and unguided practice (You do it.), and
3) Practice should include initial practice, distributed practice, and cumulative review.

Equally important, the instruction must be delivered in an engaging fashion in which the teacher: (a) elicits frequent responses from students, (b) monitors student responses and adjusts the lesson as necessary, (c) provides immediate feedback including praise, encouragement, and corrections, and (d) maintains a brisk pace to ensure attention and engagement.

Explicit instruction is a powerful pedagogy in many situations but especially when students have little background knowledge related to what is being taught and have experienced difficulty in obtaining critical skills and strategies. Therefore, explicit instruction is the perfect instructional tool for the students who need *REWARDS Intermediate* and for the delivery of its content.