

RENAISSANCE[®]

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The Design of Accelerated Reader[®] Assessments



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Introductions

Renaissance Accelerated Reader® (AR) software makes the essential student practice component of any reading curriculum more effective. This practice time is personalized to each student's individual level to ensure a high rate of success and is immediately followed by feedback to help educators target instruction. Personalized reading practice includes guiding students to books at appropriate levels, closely monitoring their progress, and intervening with appropriate instruction when necessary.

Accelerated Reader furthers the efforts of several important initiatives currently on the minds of educators nationwide. To support multi-tier systems of support, such as Response to Intervention, Accelerated Reader Best Practices include techniques for differentiating instruction, increasing and verifying academic engaged time for reading practice, interpreting performance data, and intervening with struggling readers. The 2010 release of the Common Core State Standards for English Language Arts by the National Governor's Association and the Council of Chief State School Officers, along with education and business groups, makes a resounding call for students to be able to read and comprehend many different types of text of increasing difficulty. By guiding students to appropriate books, incorporating daily reading practice into the school day, setting individualized reading practice goals, and monitoring progress toward those goals, Accelerated Reader supports efforts to implement the Standards so that all students are prepared for college and career.

Accelerated Reader software and Accelerated Reader Best Practices have been shown by scientifically based research to be effective in helping educators dramatically accelerate reading growth in K–12 classrooms. Numerous studies by independent researchers demonstrate that students' reading abilities improve with the use of these tools, and that the performance gap between high-achieving and low-achieving students can be substantially reduced.

The large evidence base supporting Accelerated Reader consists of a number of experimental and quasi-experimental research studies—generally considered by the research community to provide the strongest evidence of effectiveness and to be consistent with the definition of scientifically based research—and includes articles that have been published in peer-reviewed journals. Research evidence on Accelerated Reader has been favorably reviewed by the Florida Center for Reading Research, the National Center on Student Progress Monitoring, the National Dropout Prevention Center, and the What Works Clearinghouse, among others.

Accelerated Reader Quizzes

Four types of quizzes are available in Accelerated Reader: Reading Practice Quizzes (which include Recorded Voice and Spanish), Vocabulary Practice Quizzes, Literacy Skills Quizzes, and Other Reading Quizzes. Each quiz type is designed following guidelines from independent research, assessment reliability and validity, standardization and consistency, general issues with assessments, and best practices for use.

With the variety of quizzes available, teachers are able to monitor just about every kind of reading available to students, and different aspects of achievement related to reading (e.g., literal comprehension, higher order thinking, and vocabulary development). As of November 2011, more than 140,000 Accelerated Reader quizzes have been developed. Available titles can be found on Renaissance Accelerated Reader Bookfinder® (www.arbookfind.com).

Accelerated Reader Enterprise—powered by Renaissance Place Real Time, a web-based data management system—provides access to all Reading Practice, Vocabulary Practice, Literacy Skills, and Other Reading Quizzes as soon they become available. Accelerated Reader Enterprise offerings include professional development, the Renaissance Place Dashboard, Renaissance Home Connect, Accelerated Reader Widgets, expanded technical support, Live Chat, and automatic software upgrades. Accelerated Reader quizzing is also available on the NEO 2 as well as iPhone®, iPad®, and iPod touch® devices.

Reading Practice Quizzes

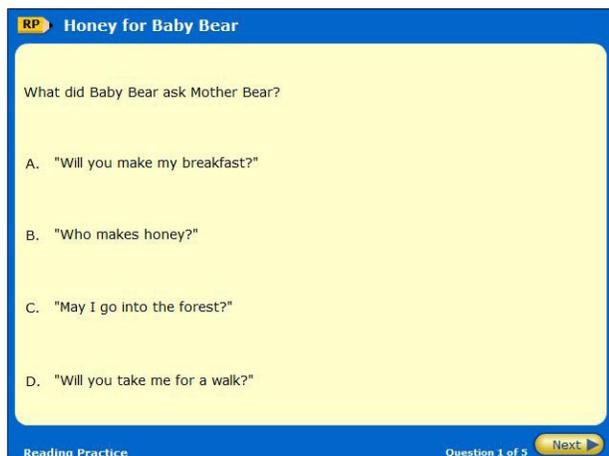
Students take Reading Practice Quizzes, the most common quiz type, after they have read a book independently, read a book with someone else, or had a book read to them. The quizzes determine if a student has read the book and measure literal comprehension.

Accelerated Reader quiz results provide immediate feedback to (1) help teachers monitor and manage student reading (i.e., quantity, quality, and difficulty), and (2) motivate students to read (e.g., provide progress towards goals, help with book selection).

Depending on a book's length and ATOS book level,¹ a Reading Practice Quiz comprises 5, 10, or 20 items. The 5-item quizzes are primarily used to cover short books read by emergent readers, while 20-item quizzes cover longer books at higher readability levels. The most common quiz length is 10 items, which covers mid-range, medium-length books.

Quiz questions typically focus on significant events, characters, and other literal features, and questions are presented in an order that matches the chronology of a book to reinforce story grammar. Figure 1 shows a sample question from an Accelerated Reader Reading Practice Quiz.

Figure 1. Accelerated Reader Practice Quiz item



Stiggins (2005) noted that poor readers, nonreaders, and emergent English readers are not able to effectively take selected-response (multiple-choice) assessments in English. To help, Accelerated Reader offers Recorded Voice Quizzes and Spanish Quizzes, which teachers can administer without extra assistance to preliterate and emergent readers as well as Spanish bilingual, ESL, ELL, and Spanish language learning students.

Recorded voice quizzes

Recorded Voice Quizzes (available in English and Spanish) are a type of Reading Practice Quiz intended for preliterate, struggling, and emergent readers, which are professionally recorded by a narrator who reads the quiz questions and answer choices as they appear on-screen. The sound can be turned on or off depending on the student's independent reading ability. One use for Recorded Voice Quizzes is to provide a student who is read a book the same scaffold while taking that book's Accelerated Reader quiz.

Spanish quizzes

Reading Practice Quizzes in Spanish, which are intended for native Spanish bilingual, ESL, ELL, and Spanish language learning students, are written and edited by native Spanish speakers and are available for best-selling

¹ ATOS book level is determined using Renaissance Learning's ATOS Readability Formula for Books; see Milone, 2009.

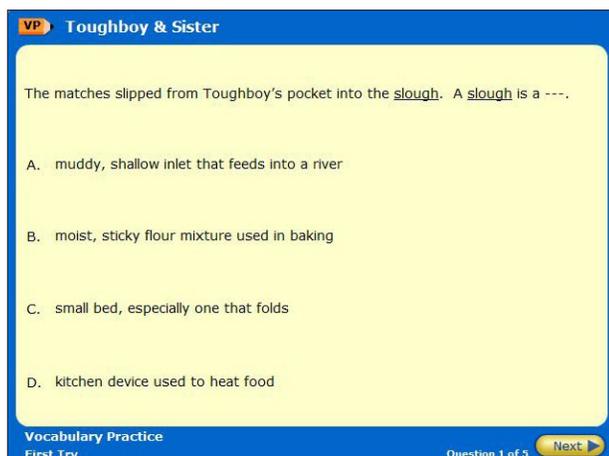
Spanish titles. Popular bilingual books have two quizzes available, one in English and one in Spanish, to provide students and teachers with added flexibility.

Vocabulary Practice Quizzes

Because vocabulary development is an important component of learning how to read (Nagy, 1988; National Institute of Child Health and Human Development, 2000), Accelerated Reader includes Vocabulary Practice Quizzes, which measure a student's command of the vocabulary words encountered while reading.

These quizzes are designed to reinforce vocabulary acquisition, assist with individualizing vocabulary instruction, and generate student interest in words through authentic, in-context literature experiences. The vocabulary words selected for each book are at or above its ATOS book level, appear in the book at least twice, are significant to the book's meaning, and are interesting or useful in everyday conversation. Quizzes include 5, 10, or 15 words from a particular book as well as review words from previously read books. Figure 2 shows a sample question from an Accelerated Reader Vocabulary Practice Quiz.

Figure 2. Accelerated Reader Vocabulary Practice Quiz item



After a student chooses a book to read, its vocabulary list can be printed on paper or as a label to affix to either a bookmark or the inside cover of the book. Students should review a book's vocabulary list before reading, encounter the words in context while reading, and then review the list again upon finishing the book. To motivate students and foster a "word culture" in the classroom, teachers can provide ongoing strategies for word learning and help students apply these strategies to the word lists. A student takes a book's Vocabulary Practice Quiz after taking and passing that book's Reading Practice Quiz. Accelerated Reader includes reports for monitoring each student's continuing vocabulary development.

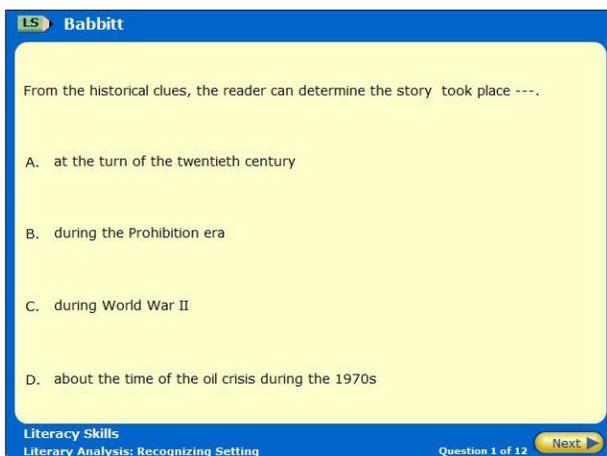
Literacy Skills Quizzes

Literacy Skills Quizzes were developed to help identify students' reading strengths and weaknesses. Teachers can administer these quizzes for various reasons, such as test preparation or to assess a deeper understanding of a book. Many of these books are considered classics, such as *Charlotte's Web*, *A Farewell to Arms*, and *Macbeth*. As with Vocabulary Practice Quizzes, teachers are advised to have students take these quizzes after passing the Reading Practice Quiz for the same book.

Questions on Literacy Skills Quizzes are randomly generated from a 36- or 60-item bank. The item-bank approach is appropriate because of the ample content in the books for which these quizzes are developed. Most Literacy Skills Quizzes contain 12 items (using the 36-item bank), but a few are available with 24 items (using the 60-item bank). Item-bank technology allows students to take Literacy Skills Quizzes up to three times.

Quiz items are based on 24 specific higher order reading- comprehension skills from state standards, basal reading series, and standardized tests, grouped into four categories—initial understanding, literary analysis, inferential comprehension, and constructing meaning. Examples of the skills assessed are understanding the main idea, understanding characterization, recognizing cause and effect, and recognizing plot. Reports can be generated from Accelerated Reader to give teachers an accurate picture of students' progress learning these skills. Some Literacy Skills Quizzes include an electronic teacher's guide with a brief summary, a main character list, vocabulary words, and questions to prompt discussion. Figure 3 shows a sample question from an Accelerated Reader Literacy Skills Quiz.

Figure 3. Accelerated Reader Vocabulary Practice Quiz item



Other Reading Quizzes

Other Reading Quizzes are created for reading textbook series (in both English and Spanish) and other classroom resources to enable teachers to monitor independent and classroom reading of assigned material. Like Reading Practice Quizzes, they follow the order of the text and assess literal comprehension using a multiple-choice format.

Other Reading Quizzes are aligned to a variety of textbooks, including series published by Macmillan/McGraw-Hill, Harcourt School Publishing, Houghton Mifflin, Houghton Mifflin/Harcourt, Pearson/Scott Foresman, and SRA/McGraw-Hill. These quizzes are specifically linked to how textbooks and other materials are used in the classroom, with content organized into various subject units.

Quiz Development

So that Accelerated Reader quizzes present “a meaningful, interesting, and reasonably demanding challenge” (Black & Wiliam, 1998, p. 24), the development of each quiz entails a multistep editorial process with checks at several points to ensure quality. Dedicated content developers and editors from Renaissance Learning create and edit quizzes following guidelines for designing multiple-choice assessments recommended by several researchers (e.g., Frary, 1995; Haladyna, Downing, & Rodriguez, 2002; Stiggins, 2005). Two main goals guide this process: Make

sure quiz questions (1) are key to the text or advance the plot in an important way, and (2) are not guessable without having read the book.

The quiz-writing process begins with a content developer reading a book and drafting items that reflect key points in the text or plot. Each book's quiz is written at or below its ATOS book level to ensure students understand what is being asked. At least three editors review the quiz at various stages of the editorial process to evaluate content, plausibility, spelling, usage, grammar, punctuation, and conformation to quiz style. Special attention is paid to the incorrect answer choices (*distractors*) to make sure they are neither implausible nor too similar to the correct answer.

Following these reviews and any necessary modifications, an editor evaluates the quiz to determine if the software will recognize the correct responses. Quiz reliability and validity are continually assessed and updated as needed (Renaissance Learning, 2010a).

A point value is assigned to each book based on the number of words it contains and its ATOS book level. After students complete each quiz, they receive a point value based on the percentage of questions answered correctly. Points are an indication of the amount of time a student has been engaged in reading practice (e.g., the longer a book, the more time a student has spent reading and the more points earned) (Paul, 1996; Paul, 2003).

Reliability, validity, and usability

Accelerated Reader quizzes conform closely to the most widely accepted principles of assessment (Renaissance Learning, 2010a). *Reliability* is the extent to which the scores from an assessment are consistent across repeated administrations of the same or similar assessments to the same group or population. The more reliable assessment scores are, the more they are free from errors of measurement; however, in educational assessment, some degree of measurement error is inevitable. The internal reliability of Accelerated Reader quiz scores has been documented to be in the moderate to high range, with reliability increasing as quiz length increases and as students accumulate a longer record of quizzes.

Validity is the degree to which an assessment measures what it claims to measure. Accelerated Reader quizzes are valid because they are tied directly to the content of a specific book or passage and focus on facts rather than conjecture. In one study of Accelerated Reader quiz validity, students were instructed to take quizzes on books they had not read. Nearly all of the students failed the quizzes, yet their prior quiz history showed that they tended to perform well on quizzes for books they had read. The results confirm that quiz content is highly related to book content, and without this knowledge, students cannot pass Accelerated Reader quizzes. In other words, Accelerated Reader quizzes are valid assessments of literal reading comprehension.

In addition to being reliable and valid, Accelerated Reader's computerized, multiple-choice (selected-response) quizzes are *usable*; in other words, the quizzes are easy to use and efficient in terms of time and cost. The assessments provide a high degree of useful information while consuming relatively few teacher resources, such as time. In fact, in 2010, educational researcher Stuart Yeh examined 22 approaches for raising student reading achievement and determined Accelerated Reader to be the most cost-effective.²

All Accelerated Reader quizzes have a median time of less than 10 minutes per quiz; the median time to complete the most commonly-used quiz type (the 10-item Reading Practice Quiz) is just over 3 minutes (Renaissance

² Other approaches examined included high quality preschool, summer school, full-day kindergarten, class size reduction, a 10% increase in per pupil expenditure, voucher programs, value-added teacher assessment, a longer school day, higher licensure test scores, charter schools, and National Board for Professional Teaching Standards Certification.

Learning, 2010a). Quizzes also save teachers time because they do not need to be scored individually or administered one-on-one. As noted by Stiggins (2005),

[Selected-response] tests are efficient in that we can administer large numbers of multiple-choice or true/false test items per unit of testing time. Thus, they permit us to sample widely and draw relatively confident generalizations from the content sampled. For this reason, when the target is knowledge mastery, selected response formats fit nicely into the resource realities of most classrooms. (p. 70)

Standardization and consistency

Accelerated Reader quizzes fit the definition of *standardized* given by Popham (1999), in that they are “administered and scored in a predetermined, standard manner.” This characteristic is important because it ensures that the quizzes are fair. Also, the consistent manner in which Accelerated Reader quizzes are developed and administered means the information they provide is comparable over time and from student to student. In order to maintain fairness and consistency, Accelerated Reader does not allow teachers to alter a quiz in any way. Allowing such flexibility would render the information collected meaningless because data would not be comparable from student to student.

Assessment Issues

The information that follows provides guidance on potential questions that may arise while using Accelerated Reader.

Quizzing on books that become movies

Popular books frequently appear at the theater as movies by the same name. If such a movie is (1) a nationwide theater release, (2) a very popular title or has wide appeal for an age group, and/or (3) is readily available via DVD, online streaming, and so forth, we revise the related quiz to make it very unlikely students could pass simply by watching the movie. Schools on the Renaissance Place Real Time platform will automatically have access to revised quizzes as they become available.

Open-book quizzing

Teachers are discouraged from allowing open-book quizzing with Accelerated Reader. When a student relies on recall while quizzing, quiz scores indicate the student’s level of reading comprehension. Low quiz scores (below 80% on a single quiz or below 85% on average) suggest a student may be struggling with the books read. When this is the case, the teacher should adjust the student’s zone of proximal development (ZPD)³ and help guide students to more appropriate books.

If a student relies on finding information in a book while quizzing, the quiz results no longer accurately indicate reading comprehension. A student may continue to select books that are too difficult, yet pass the quiz by looking up answers in the book. As a result, the teacher may not realize for some time that the student needs additional support to improve reading comprehension—until that student receives a low score on the Star Reading assessment, a state test, or another standardized test of reading achievement. There are a couple exceptions where open-book quizzing in Accelerated Reader may be appropriate:

³ A student’s ZPD, a theoretical concept inspired by Russian psychologist Lev Vygotsky (1978), is the reading range that will result in optimal growth, determined using a grade-equivalent (GE) score and the Accelerated Reader Goal-Setting Chart (see p. 10).

- During instruction on how to take Accelerated Reader quizzes, but for no more than 2 weeks
- During instruction on how to read nonfiction and take corresponding Accelerated Reader quizzes, but for no more than 2 weeks
- As a tactic used strategically with any student as part of comprehension instruction or intervention

Retaking quizzing

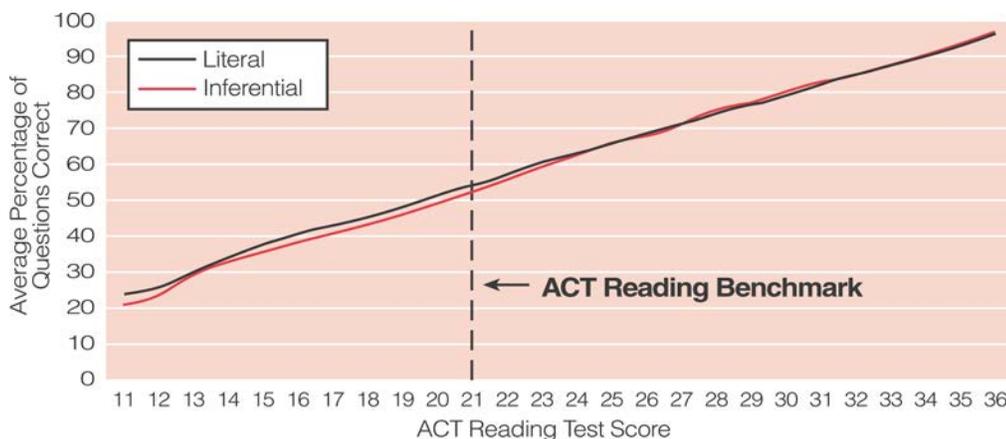
Students cannot take Reading Practice, Vocabulary Practice, or Other Reading Quizzes more than once. Accelerated Reader quizzes are designed so that if a student does not pass a quiz, it is probably because either the student has not read the book or the ATOS book level is well above the student’s optimal range (ZPD).

Literacy Skills Quizzes are the exception to this rule. Their purpose is to measure various aspects of comprehension using test questions correlated to specific comprehension skills. Item-bank technology allows teachers to have students retake Literacy Skills Quizzes up to three times to provide additional practice or to assess specific elements of comprehension. In addition, Literacy Skills Quizzes are useful for diagnostic purposes, such as to measure the change in a student’s skills after an intervention or to determine if a student has mastered one or more skills.

Literal understanding

Occasionally, Accelerated Reader quizzes are criticized as assessing only literal comprehension; however, it should be kept in mind that this is an important aspect of learning. Literal comprehension provides the foundation for higher order thinking. According to Stiggins (2005), “by deemphasizing content mastery [i.e., literal comprehension], we in effect deny our students access to the very content they need to solve the problems that we want them to solve” (p. 46). In 2006, ACT, Inc., discovered that literal and inferential understanding did not differentially affect average percent correct on the ACT. In fact, the relationship between these two comprehension categories and average percent correct was nearly identical (see Figure 4).

Figure 4: Performance on the ACT Reading Test by Comprehension Level (Averaged Across Seven Forms)



Note: Analysis was based on students who took any of seven test forms administered between fall 2003 and spring 2005. It was not possible to analyze performance below a score of 11 due to the small number of students scoring in this range.

Reprinted with permission from ACT, Inc. (2006). *Reading between the lines: What the ACT reveals about college readiness in reading.* Iowa City, IA: Author.

As seen in Figure 4, the assessment of literal understanding is closely tied to inferential comprehension, or higher order thinking, and provides as much information as assessments on higher order skills. Accelerated Reader

facilitates student reading practice in an effective reading curriculum. All students who read a book and understand it at a basic level receive the same score on the Accelerated Reader quiz, consistently fulfilling the purpose of the assessment—to determine whether a student has read and comprehended the book. Higher order thinking skills should be taught during direct instruction and can be reinforced via Accelerated Reader Literacy Skills Quizzes.

Assessment Practices

Motivation and challenge

Accelerated Reader helps teachers motivate students by providing opportunities for successful reading practice. Teachers use information from Accelerated Reader to assist students with book selection, monitor reading practice, provide frequent and objective feedback, and set reading goals. Students have fun as they select and read interesting books at appropriate levels and experience success on Accelerated Reader quizzes—both positive, reinforcing experiences. As students learn that reading is fun, the amount they read and their motivation to read both increase.

Implementing Accelerated Reader according to Accelerated Reader Best Practices promotes both personalized goal setting and appropriate book levels (Renaissance Learning, 2006). Establishing goals for student reading practice, such as average percent correct; using ZPD ranges to select books with appropriate ATOS book levels; and attaining reading certification—all practices facilitated by Accelerated Reader—lead to greater reading motivation. A study by Husman, Brem, and Duggan (2005) found that students' orientation on mastery, rather than performance (such as achieving a grade), consistently remained high after implementation of Accelerated Reader. This tendency is consistent with the observations of Black and Wiliam (1998) that students respond more favorably when they can establish their own goals and are presented with "a meaningful, interesting, and reasonably demanding challenge" (p. 24).

Informative assessment and teacher involvement

The purpose of daily progress-monitoring assessments like Accelerated Reader is to inform instruction, provide immediate performance feedback, monitor progress, and increase motivation. These assessments, as noted by Stiggins (2005), are *for learning* rather than *of learning*, meaning the goal is to enhance learning, not just to demonstrate what has been learned or assign a grade. This cannot be accomplished, however, without interaction between the teacher and student, coupled with information provided by the assessment.

Teachers enable excellence in student performance by teaching with methods based on information (Paul, 2003). Progress-monitoring data from Accelerated Reader, along with many other sources (e.g., short conferences with students), are a key source of information in the classroom. Teachers make the student practice component of their reading curriculum more effective by using Accelerated Reader to help guide students to books with ATOS book levels appropriate to their individualized ZPDs, monitor student reading progress, provide social feedback to students (e.g., praise), and adjust instruction and curriculum.

Implementation fidelity with Accelerated Reader Best Practices

To maximize the benefits of Accelerated Reader quizzes and ensure that students benefit from reading practice to the greatest extent possible, Renaissance Learning developed the research-based Accelerated Reader Best Practices. Implementing Accelerated Reader with fidelity according to Accelerated Reader Best Practices, sometimes referred to as *high implementation*, has been shown to improve reading comprehension (see Research

Basis, p. 8). Listed below are the Accelerated Reader Best Practices. As can clearly be seen, the teacher is key to effective use of Accelerated Reader.

1. Reading time: The teacher provides students with appropriate time for teacher-guided independent reading of self-selected books. We urge educators to strive for 35 minutes (see Research Basis, Figure 6, p. 9).
2. Reading success: The teacher ensures students average 85 percent correct or above on Accelerated Reader quizzes. Averages of 90 percent and higher are associated with the greatest gains (Borman & Dowling, 2004; Paul, 2003; Renaissance Learning, 2011a).
3. Appropriate ATOS book levels: The teacher checks that students are reading within recommended ZPD ranges; however, ZPD is a starting point and should be adjusted as appropriate. Teachers may encourage students to read above this range as long as they have instructional supports and are motivated to read the book. (Interest levels should also be taken into consideration in book selection.)
4. Progress monitoring: The teacher obtains progress-monitoring information from at least three sources: daily feedback from *Status of the Class*,⁴ daily and weekly feedback from Accelerated Reader, and periodic (3 to 10 times per year) feedback from a reliable and valid assessment such as Star Reading (perhaps more often for students in intervention) (Renaissance Learning, 2010b, 2011b).
5. Personalized goals: The teacher monitors students' personalized goals in three areas: average percent correct on Accelerated Reader quizzes, reading practice time (measured by points), and average ATOS book level (see the Accelerated Reader Goal-Setting Chart, p. 10).
6. Personalized instruction: The teacher combines information from daily progress monitoring, Accelerated Reader, Star Reading, and students' individualized goals to inform, improve, assess, and differentiate instruction.

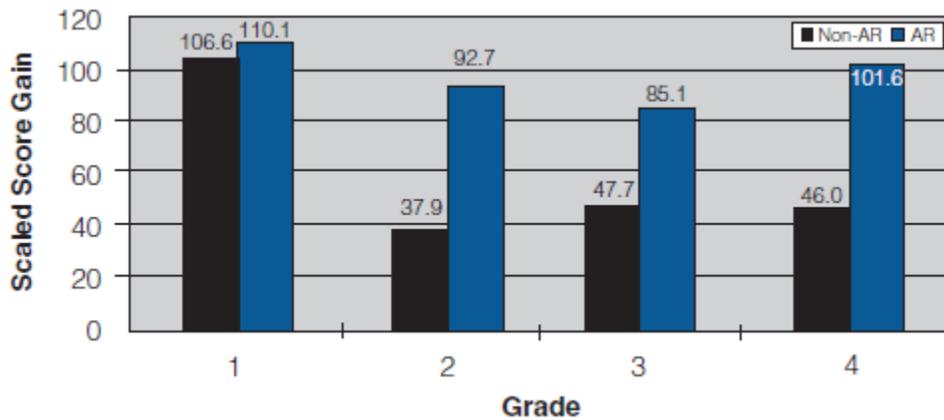
Research Basis

As of November 2011, more than 30 experimental and quasi-experimental studies have analyzed the impact of Accelerated Reader and its research-based Accelerated Reader Best Practices. In five recent studies, students who used Accelerated Reader outperformed students in control classrooms.

In a 2010 study, researchers at Magnolia Consulting randomly assigned teachers in grades 1–4 at three Chicagoland elementary schools to use Accelerated Reader in their classes or serve in the control group. Of the 344 students studied, those in Accelerated Reader classes experienced significant gains in reading achievement from pre- to posttest, with a large effect size of $d = 0.99$. Overall, when compared to the control group, the Accelerated Reader group outperformed the non-Accelerated Reader students at each grade level and experienced significantly higher gains ($d = 0.38$) equivalent to moving from the 50th percentile rank (PR) to the 65th PR, while comparison students remained at the 50th PR (see Figure 5).

⁴ During Status of the Class, teachers conference briefly with students each day to monitor and guide reading practice as well as offer support and praise. During this meeting, teachers check students' reading logs to see that they have recorded book information, including the number of pages read both inside and outside of class. Teachers check not only that students have read the book but also that they are enjoying and understanding what they read.

Figure 5: Accelerated Reader Students Far Exceed Control Group Reading Gains



Nunnery and Ross (2007) matched 11 schools that used Accelerated Reader for comparison with similar schools not using the program. Elementary students in the Accelerated Reader schools performed better on reading achievement than the control students. Students in schools with high-intensity implementations also scored significantly higher than students in comparison schools or schools with low-intensity implementations.

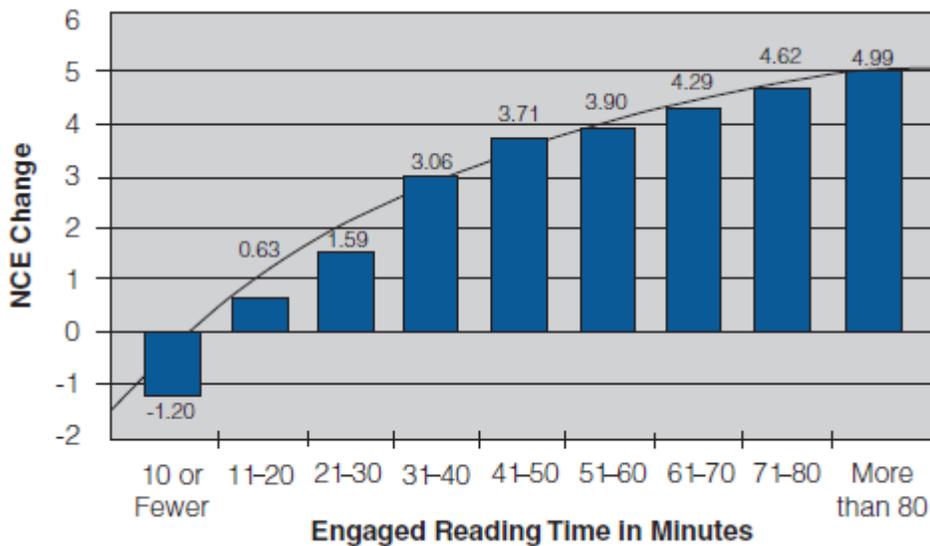
Nunnery, Ross, and McDonald (2006) randomly assigned 44 third- through sixth-grade classrooms (containing 978 at-risk students) either to implement Accelerated Reader with the current curriculum or to continue using only the curriculum. Student reading scores improved in Accelerated Reader classrooms, and students with learning disabilities improved the most in classrooms with high implementation integrity.

Ross, Nunnery, and Goldfeder (2004) examined 1,665 students in 76 classrooms from 11 schools in Memphis, Tennessee. Teachers were randomly assigned to use Accelerated Reader with the current curriculum or to continue using only the curriculum. Moderate to large positive effect sizes were found for the students using Accelerated Reader in grades K–3.

Samuels and Wu (2003) randomly assigned 67 students in third and fifth grade to use Accelerated Reader (which provides immediate feedback on comprehension) or to complete book reports (which result in delayed feedback after being graded by teachers). Accelerated Reader classes achieved significantly higher reading comprehension scores than classes that completed book reports, illustrating that the immediate feedback provided by Accelerated Reader improved reading comprehension.

In addition to these studies, the results from an examination of the reading records of 50,823 students indicate that reading achievement was enhanced in classrooms with carefully guided independent reading, increased reading practice time, and high implementation of Accelerated Reader (Paul, 2003). In general, this study found that students can attain greater reading achievement by reading 20 minutes or more each day and by scoring 85% or higher on Accelerated Reader quizzes, a recommendation confirmed by Borman and Dowling (2004) and Topping, Samuels, and Paul (2007). At the same time, we urge educators to strive for 35 minutes, which, as shown in Figure 6, is the “sweet spot” for reading practice—the point at which students achieve the most growth for the least amount of time spent reading.

Figure 6: Reading Achievement Gains at Varying Levels of Engaged Reading Time



Adapted from Topping, Samuels, & Paul, 2007

Both the experiences of teachers and the results from large-scale experimental and quasi-experimental research studies indicate that quantity of student reading practice is one of the key factors in reading achievement. A study of 174,000 15-year-old students in 32 countries showed that time spent reading books is the best single predictor of academic achievement, more highly correlated than even socioeconomic status or ethnicity (Kirsch, de Jong, Lafontaine, McQueen, Mendelovits, & Monseur, 2002). This conclusion is also supported by the results of the National Assessment of Educational Progress (National Center for Education Statistics, 1999): “In 1998, at all three grades assessed [4, 8, and 12], students who reported reading more pages daily in school and for homework had higher average scale scores than students who reported reading fewer pages daily” (p. v).

Independent research also underscores the relationship between quantity and quality of students’ independent reading practice time. Bolt (2004) analyzed 3,000 classrooms that used Accelerated Reader and discovered that when it was implemented according to Accelerated Reader Best Practices, student achievement significantly increased. Specifically, when students spent more time on guided independent reading, reading gains increased. Regardless of reading curriculum, students in classrooms with higher levels of implementation achieved greater gains than students with lower levels.

What the research means

These results occur for a number of reasons. Students who use Accelerated Reader spend more time reading books than students who do not use Accelerated Reader, and the longer students use the program, the more they read (Paul, 2003). Accelerated Reader is also a motivational tool, which supports student motivation to read (Brem, Husman, & Duggan, 2005). Additionally, teachers who use Accelerated Reader are encouraged to follow Accelerated Reader Best Practices for classroom implementation, one of which is to seek high levels of comprehension on quizzes (Borman & Dowling, 2004; Paul, 2003). All of these factors combine to increase student reading achievement.

Conclusion

Accelerated Reader quizzes are reliable and valid, scientifically research based, and provide teachers with relevant information to guide instruction and monitor student reading practice. For students, the immediate feedback the quizzes provide is motivational. Reading Practice Quizzes contain a fixed number of questions, determine if a student has read a book, and motivate additional reading. Vocabulary Practice Quizzes provide necessary practice for improving and enlarging vocabulary. Literacy Skills Quizzes contain questions drawn from an item bank and are meant to assess a broad range of comprehension skills. Other Reading Quizzes help teachers monitor students' reading assignments in textbooks and supplemental texts.

A large database of high-quality quizzes, now numbering more than 140,000, has made Accelerated Reader one of the most popular educational software tools in America's schools. An extensive body of research supports its effectiveness, and ongoing research ensures that this program will continue to enhance teachers' efforts.

Appendix: Accelerated Reader Goal-Setting Chart

Beginning in 2012, if you have Accelerated Reader and Star Reading on Renaissance Place Real Time, the software will automatically recommend a ZPD and goals for each student. Otherwise, use Table A1 and the guidelines below, or the online **Accelerated Reader Goal Calculator**: <http://argos.renlearn.com/>, to help set reading practice goals for your students, based on their reading level and the amount of time you provide for practice.

- 1 **Identify ZPDs.** Identify each student's grade-equivalent (GE) score with a standardized assessment, such as Star Reading, or estimate a GE based on a student's past performance. The corresponding ZPD is a recommended book-level range for the student. If books in that range seem too hard or easy for the student, choose a new range or create a wider one that better matches the student's abilities.
- 2 **Set the Average-Percent-Correct Goal.** The most important goal for all students is to average at least 85 percent on Accelerated Reader Reading Practice Quizzes. Averages of 90 percent and higher are associated with the greatest gains. If a student struggles to maintain this average, talk to the student and find out why. Then decide on a strategy that will lead to success.
- 3 **Set Point Goals.** The chart shows the number of points students are expected to earn based on GE and time spent reading. (Point goals for emergent readers are based on scaled scores from Star Early Literacy.) These are estimates. Set goals that are realistic for individual students. Points earned by emergent readers will reflect time spent listening to books read aloud and reading with a partner, as well as some independent reading.

Table A1: Accelerated Reader Goal-Setting Chart

Grade-Equivalent Score	Suggested ZPD	60 Min. Daily Practice			35 Min. Daily Practice			30 Min. Daily Practice			20 Min. Daily Practice		
		Points per Week	Points per 6 Weeks	Points per 9 Weeks	Points per Week	Points per 6 Weeks	Points per 9 Weeks	Points per Week	Points per 6 Weeks	Points per 9 Weeks	Points per Week	Points per 6 Weeks	Points per 9 Weeks
Emergent Reader		1.7	10	15	1.0	5.8	8.8	0.9	5.0	7.5	0.6	3.3	5.0
1.0	1.0-2.0	1.7	10	15	1.0	5.8	8.8	0.9	5.0	7.5	0.6	3.3	5.0
1.5	1.5-2.5	1.9	11	17	1.1	6.4	9.9	1.0	5.5	8.5	0.6	3.7	5.7
2.0	2.0-3.0	2.1	13	19	1.2	7.6	11.1	1.1	6.5	9.5	0.7	4.3	6.3
2.5	2.3-3.3	2.3	14	21	1.3	8.2	12.3	1.2	7.0	10.5	0.8	4.7	7.0
3.0	2.6-3.6	2.5	15	23	1.5	8.8	13.4	1.3	7.5	11.5	0.8	5.0	7.7
3.5	2.8-4.0	2.7	16	24	1.6	9.3	14.0	1.4	8.0	12.0	0.9	5.3	8.0
4.0	3.0-4.5	2.8	17	25	1.6	9.9	14.6	1.4	8.5	12.5	0.9	5.7	8.3
4.5	3.2-5.0	3.2	19	29	1.9	11.1	16.9	1.6	9.5	14.5	1.0	6.3	9.7
5.0	3.4-5.4	3.5	21	32	2.0	12.3	18.7	1.8	10.5	16.0	1.2	7.0	10.7
5.5	3.7-5.7	3.9	23	35	2.3	13.4	20.4	2.0	11.5	17.5	1.3	7.7	11.7
6.0	4.0-6.1	4.2	25	39	2.5	14.6	22.8	2.1	12.5	19.5	1.4	8.3	13.0
6.5	4.2-6.5	4.6	28	41	2.7	16.3	23.9	2.3	14.0	20.5	1.5	9.3	13.7
7.0	4.3-7.0	4.9	29	44	2.9	16.9	25.7	2.5	14.5	22.0	1.6	9.7	14.7
7.5	4.4-7.5	5.3	32	48	3.1	18.7	28.0	2.7	16.0	24.0	1.8	10.7	16.0
8.0	4.5-8.0	5.6	34	50	3.3	19.8	29.2	2.8	17.0	25.0	1.9	11.3	16.7
9.0	4.6-9.0	6.3	38	57	3.7	22.2	33.3	3.2	19.0	28.5	2.1	12.7	19.0
10.0	4.7-10.0	6.9	41	62	4.0	23.9	36.2	3.5	20.5	31.0	2.3	13.7	20.7
11.0	4.8-11.0	7.6	46	68	4.4	26.8	39.7	3.8	23.0	34.0	2.5	15.3	22.7
12.0	4.9-12.0	8.3	50	75	4.8	29.2	43.8	4.2	25.0	37.5	2.8	16.7	25.0

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