National Geographic School Publishing Assessments:

Reading Level Gains Test and Placement Test for *Inside* and *Edge*

2007–2009

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LINKING ASSESSMENT WITH INSTRUCTION

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Background and Purpose

Assessment is a critical component of National Geographic School Publishing's adolescent literacy intervention programs: *Inside* Language, Literacy, and Content and Hampton-Brown *Edge*™. Both programs provide a comprehensive solution for middle school through high school students reading two or more years below grade level and also for English language learners. The assessments described in this report play an important role in monitoring and supporting students' progress toward grade level achievement in reading.

National Geographic School Publishing's Reading Level Gains Test and the Placement Test for *Inside* and *Edge* are research-based, scientifically valid, and reliable. Both tests are based on The Lexile Framework® for Reading, were developed in partnership with MetaMetrics®, Inc., the originators of this framework, and have been rigorously evaluated by third-party researchers to ensure adherence to the highest standards of quality for student assessment. These tests support *Inside* and *Edge* by providing assessments to determine program placement and to monitor progress in student reading comprehension ability.

Student reading proficiency on the Reading Level Gains Test and the Placement Test for *Inside* and *Edge* are reported as measures on the Lexile® scale. The Lexile Framework for Reading provides a common developmental scale for matching reader ability and text difficulty. Lexile scale measures are easily compared since differences in Lexile measures have the same meaning from one test to another and as such represent equal differences in ability, unlike other types of measures (e.g., raw scores or percentiles).

Comprehensive research studies were conducted during the 2007–2008 school year to guide test development and to gather validity and reliability evidence for the Reading Levels Gains Test and the Placement Tests. Further technical studies were conducted during the 2008–2009 school year to gather additional evidence of the tests' rigor. Results of these psychometric studies demonstrate that the Reading Level Gains Test and the Placement Test for *Inside* and *Edge* can be used with confidence for the purpose of assessing and monitoring student progress in reading ability.

The Lexile Framework for Reading

The Lexile Framework is a widely used scientific approach to measuring reading ability and the difficulty of reading materials (www.Lexile.com). The Lexile Framework includes a Lexile measure and the Lexile scale. A Lexile measure represents both the difficulty of a text, such as a book or article, and an individuals' reading ability. Lexile measures are expressed as a number followed by an "L" (e.g., 850L), and are placed on the Lexile scale.

The Lexile scale is a developmental scale for measuring reader ability and text difficulty, ranging from below 200L (BR) for beginning readers and beginning-reader materials to above 1700L for advanced readers and materials. Knowing the Lexile measures of a reader and the text helps to predict how well the text matches the reader's ability—whether the text may be too easy, too difficult, or just right.

Within the Lexile Framework, text difficulty is determined by examining the characteristics of word frequency and sentence length. The text measures typically range from 0 Lexiles (L) to 1800 Lexiles (L). Within any one classroom there should be a range of reading materials to reflect the student range of reading ability and interest in different topics and types of text. The Lexile Framework is a powerful way to examine the growth of readers—wherever the reader may be in the development of his or her reading skills. Readers can be matched with texts that they are forecasted to read with 75% comprehension. As a reader grows, he or she can be matched with more demanding texts, and as the texts become more demanding the reader grows.

An important outcome of the Reading Level Gains Test and the Placement Test for *Inside* and *Edge* is to locate the reader on the Lexile scale. Readers and texts are measured in the same Lexile metric making it possible to directly compare a reader and a text. Once a reader is measured it is possible to forecast how well the reader will comprehend thousands of books and articles that have been measured in the Lexile metric by matching them to their corresponding points on the Lexile scale.

The National Geographic School Publishing Assessments

The Placement Tests for *Inside* and *Edge* provide Lexile measures to guide teachers in pinpointing the optimal point of entry for students in either the *Inside* or the *Edge* program so students receive the most appropriate level of challenge and support based on their unique instructional needs. As students move through a reading program, reading comprehension can be assessed periodically using different forms of the Reading Level Gains Test. Charting periodic Lexile measures make it easy to monitor gains in students' reading proficiency over time. Reading improvement can be identified and instruction adjusted accordingly (e.g., placement in a subsequent level, further instruction of reading comprehension strategies, or exiting from an intervention or language development program). The diagram shown below (Figure 1) illustrates a typical test administration plan.

FIGURE 1
Sample Test Administrator Plan (Placement Test and Reading Level Gains Test)

Spring/Early Fall	Late Fall	Winter/Early Spring	End of School Year
Placement Test (*Inside* or *Edge*)	**Reading Level Gains Test** (Form 1)	**Reading Level Gains Test** (Form 2)	**Reading Level Gains Test** (Form 3)

The Placement Tests for *Inside* and *Edge*

The Placement Tests for *Inside* or *Edge* measures a student's ability to comprehend texts of increasing difficulty. The results of the Placement Tests can be used to measure where students are in the development of their reading skills and to provide information about appropriate reading program placement. The *Inside* Placement Test assists educators in placing middle school students into Level A, B, C, D, or E of the *Inside* program. The *Edge* Placement Test serves as a tool for educators to use to place high school students into Fundamentals or Level A, B, or C of the *Edge* instructional program (see Figure 2 below).

FIGURE 2
Placement into the *Inside* or *Edge* Programs Using Lexile Range

Lexile Range	*Inside* Placement
BR–550L	Level A
400L–650L	Level B
500L–750L	Level C
600L–850L	Level D
750L–900L	Level E

Lexile Range	*Edge* Placement
BR–650L	Fundamentals
500L–950L	Level A
750L–1075L	Level B
950L–1150L	Level C

The Placement Test includes two parts: One part assesses phonics and decoding skills with 45 items that determine if a student would benefit from additional phonics instruction. The other part of the Placement Test contains 40 multiple-choice items that measure reading level based on the Lexile Framework.

The reading sections of both the *Inside* and *Edge* Placement Tests contain 40 multiple-choice items comprising approximately 70% nonfiction items and 30% fiction items. The range of item difficulties (BR to 1220L) provides an initial estimate of a reading ability for students coming into the program with widely varying levels of a reading ability. Overlap in the test score ranges and suggested *Inside* or *Edge* placement levels provides flexibility for teachers to use established guidelines and professional judgment to select the most appropriate level for a student.

The Placement Tests may be scored by hand, by machine using scannable answer sheets, or automatically if a student has taken the test online using the eAssessment program. Results are reported as a Lexile measure. Correspondence tables enable conversion of raw scores to a scaled Lexile measure.

The Reading Level Gains Test

The Reading Level Gains Test measures a student's ability to comprehend fiction and nonfiction texts of increasing difficulty. Three parallel Reading Level Gains Test forms provide a structured method for monitoring progress and showing gains in reading proficiency over time. All three test forms are scored on the reading Lexile scale, making the results for all test forms comparable.

Each form of the Reading Level Gains Test contains a total of 80 items divided into 4 sections of 20 multiple-choice items that become gradually more difficult. During each administration of a Reading Level Gains Test, a student takes two sections, for a total of 40 items per administration. The difficulty range of the items on each of the four sections within a test increases with each section; Section 1 has the lowest range (from approximately 400L to 780L) and Section 4 has the highest range (from approximately 900L to 1200L). The Reading Level Gains Test has a combination of short and long passages comprising approximately 70% nonfiction items and 30% fiction items within each section. Each short passage has one corresponding test question. Each long passage contains five embedded test items. The nonfiction passages convey factual information of general human interest. They are written to represent content-rich areas such as social studies, science, history, technology, and general interest.

The Reading Level Gains Test may be scored by hand, by machine using scannable answer sheets, or automatically if a student has taken the test online using the eAssessment program. Results are reported as a Lexile measure. Correspondence tables enable conversion of raw scores to a scaled Lexile measure when scoring by hand. Both the machine-scored and online testing option use Bayesian scoring methodology, which uses information about a student's previous Lexile measures from either the Placement Test or the Reading Level Gains Test to produce the most current estimate of reader ability. This method of scoring is recommended because connecting each test administration to all prior administrations produces a more accurate measurement of a student's reading level than looking at results from a single test administration.

Research and Development Studies

Test Development National Geographic School Publishing partnered with MetaMetrics to devise the Reading Level Gains Test for use with the *Inside* and *Edge* instructional programs to measure reading proficiency based on the Lexile Framework for Reading. Since both programs use Lexile ranges to define each level of the program, Placement Tests based on Lexile measures were also developed.

The assessments were developed using the Rasch one-parameter item response theory model to relate a reader's ability and the difficulty of the items. Items were written by experienced MetaMetrics staff and each item went through a multiple-stage review process. Field-testing occurred with a representative sample of students (i.e., grade level, demographics, reading level). Item response data was analyzed by MetaMetrics and results were used to finalize the operational tests.

Reliability Test reliability provides evidence of the consistency and dependability of scores obtained from a given assessment. Multiple analyses were conducted to examine reliability of the Reading Level Gains Test and the Placement Test. Reliability estimates range from 0.73–0.90 (calculated using Cronbach's alpha) on the field-test forms during the 2007–2008 research studies. Users can be confident in the consistency and stability of the Reading Level Gains Test and the Placement Test scores.

Validity Construct validity evidence gathered during the 2007–2008 research and development process provides information about how well the Reading Level Gains Test and Placement Tests meet the intended function. Construct validity evidence is provided by the extensive body of research supporting the Lexile Framework and ensures users that the tests accurately measure reading comprehension.

Content validity evidence demonstrates that a test's content aligns with the construct that is being measured, in this case reading comprehension ability for fiction and nonfiction texts. Text difficulty of the reading passages was analyzed to ensure that the difficulty of the text was appropriate for the students taking the placement and progress monitoring tests. The difficulty of the item vocabulary was also matched to the difficulty of the passage. All passages were designed to reflect authentic material, and students were asked to respond to the text in ways that were appropriate for the genre. The passages and items were also thoroughly reviewed by experienced assessment developers as well as undergoing statistical analyses from research studies. The above evidence offers proof that the Reading Level Gains Test and the Placement Tests are valid measures with content that is appropriate for the purpose of the test.

Post-Publication Studies

National Geographic School Publishing contracted with SEG Research and Assessment to conduct a number of post publication studies with the Reading Level Gains Test and the Placement Test during the 2008–2009 school year. Student samples for these studies included middle school students using the *Inside* program and represented a wide range of demographic and geographic locations. These studies were conducted using the operational versions of both the Placement Test and the Reading Level Gains Test.

Placement Test Reliability Several technical studies provide evidence that the Placement Test for *Inside* is highly reliable. With a reliability estimated at .91 (using Cronbach's Alpha) and a separation coefficient of 3.11, users can be confident in the consistency and stability of the Placement Test scores.

Placement Test Validity The test and item statistics show considerable support for the technical quality of the Placement Test for *Inside*. The data suggest that test items are of high quality and are performing well. Moreover, the data suggest that the test is well targeted for the population; the test appears to be effective assessing at a wide range of ability, and is particularly effective at the lower ability levels. Considerable evidence supports the use of the Placement Test scores to identify students' reading proficiency levels. The evidence shows that the test is measuring a single underlying construct. The evidence also shows that the Placement Test is highly related to other measures of reading comprehension, language, and vocabulary skills construct. The evidence shows that performance on the Placement Test is unrelated to the test taker's gender or ethnicity. Validity evidence supports the use of the Placement Test for identifying reading proficiency and placement into the *Inside* or *Edge* programs.

Reading Level Gain Test Reliability Several technical studies completed during the 2008–2009 school year found the Reading Level Gains Test to be highly reliable. With a reliability estimated at between .86 and .88 (using Cronbach's Alpha), users can be confident in the consistency and stability of scores resulting from the various forms of the Reading Level Gains Test. The tests and item statistics showed considerable support for the technical quality of the tests. The data suggest that the items are of high quality and are performing well. Moreover, the data suggest that the test is well targeted for the student populations for which it is likely to be used.

Reading Level Gain Test Validity Considerable evidence supports the use of Reading Level Gains Tests scores to measure student reading comprehension skills and shows that this test is highly related to other measures of reading as well as other related constructs (i.e., language and vocabulary). Additionally, the evidence shows that performance on the Reading Level Gains Tests is unrelated to the test taker's gender or ethnicity. Validity evidence gathered from these technical studies supports the use of the Reading Level Gains Test for measuring students' reading proficiency and growth in reading proficiency over time.

Summary

The Placement Tests and the Reading Level Gains Test, published by National Geographic School Publishing, provide educators with valid and reliable measures to monitor students' progress in reading comprehension ability based on the Lexile Framework. The tests were developed by knowledgeable experts in reading assessment to meet rigorous quality standards. The tests were then studied, over multiple years, using the highest scientific research standards for technical analysis to ensure accuracy and usefulness in measuring reading comprehension ability. The Placement Test and the Reading Level Gains Test can be used with confidence to accurately identify a student's initial reading level and to monitor student growth in reading over time. These assessments can provide invaluable information to educators as they plan, provide, and adjust data-driven intervention instruction to middle school and high school students.

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