

Linking State Assessments with the Lexile and Quantile Frameworks



The Lexile Framework® for Reading is an educational tool that matches readers with reading materials using a common measure called a Lexile®. As the most widely adopted reading measure, Lexile measures are used at the school level in various capacities in all 50 states. Each year, more than 28 million Lexile measures are reported from reading assessments and programs—representing about half of U.S. students.

What makes the Lexile Framework unique, and what has led to its widespread adoption, is that it measures both reading ability and text difficulty on the same scale. Educators, librarians and parents use Lexile measures to connect students with books and other materials at the right Lexile level. More than 115,000 books, 80 million articles and 60,000 Web sites have Lexile measures.



The Quantile Framework® for Mathematics provides a common scale for measuring mathematics achievement, the difficulty of mathematical skills and concepts, and the materials for teaching mathematics. By placing the students, curriculum and teaching materials on the same scale, Quantile® measures enable educators to describe which mathematical skills and concepts a student is ready to learn and those that will require more instruction so that students can be matched with resources that meet their learning needs. Parents also use Quantile measures to support students' development by connecting them with targeted mathematics activities at home.

The Lexile and Quantile Frameworks were developed by educational measurement company MetaMetrics®, Inc. Research for the Lexile Framework was funded, in part, by the National Institutes of Health.

Becoming a “Lexile” or “Quantile” State

In response to *No Child Left Behind* (NCLB) and state-defined accountability models, state departments of education are required to assess annually students' proficiencies in reading and mathematics. Most education departments employ customized tests to report student progress in the NCLB grades, typically grades 3–8 and one or more years of high school. More so, many education departments have linked their state tests with The Lexile Framework for Reading and The Quantile Framework for Mathematics to fulfill federal and state mandates for student growth.

MetaMetrics partners with departments of education to conduct a study that links (or equates) the underlying reading and mathematics scales of their state tests with the Lexile or Quantile scales. These “linking” studies enable students' reading and mathematics scores to also be reported as Lexile or Quantile measures. Currently, 19 states, including California, Texas, North Carolina, Virginia and Georgia, report Lexile reader measures from their state assessments, and a growing number of states are adopting Quantile measures. (See Figure 1 on the following page for details.)

The Linking Study

MetaMetrics conducts an analysis of the state reading or mathematics test in order to construct a “theoretically parallel” (t-parallel) linking test for each grade included in the study. For tests without a vertical scale, every grade is included in the study. For tests with a vertical scale, every other grade is sampled. In both cases, about 2,000 students per grade sampled are required for the linking study. Students are recruited by the state and/or districts. A true random sample is not necessary, although a range of abilities is recommended. Students included in the sample complete the t-parallel linking test within a few weeks of taking the state assessment. Typically, the linking test takes no more time to complete than the state assessment, although it is not a timed test.

A note about vertical scales: About half of state assessments have a vertical scale. For those without a vertical scale, both the Lexile and Quantile Frameworks are vertical scales that can provide information about growth from the state's reading and mathematics testing programs.

Upon completion of the linking study, MetaMetrics provides the state department of education with a technical report that details the study procedures and results. The report, which is the property of the education department, includes the conversion tables to translate each scale score from the state test at each grade level into a corresponding Lexile or Quantile measure. Upon review and approval of the technical report, the education department can begin reporting Lexile or Quantile measures from its assessment.

A Lexile or Quantile linking study does not need to be completed every year, even if the items on the state test change from year to year. So long as the underlying scale remains the same, a new linking study is not required. For Lexile reader measures, because all of the major standardized tests have been linked with the Lexile scale, education departments can continue to report Lexile measures even if they contract with a different test publisher. For example, over the last ten years, the California Department of Education has used three different assessments, Pearson's Stanford Achievement Test (SAT-9), CTB/McGraw-Hill's TerraNova and the California English-



Language Arts Standards Test. Because each of these assessments is linked with the Lexile scale, the education department has been able to use one consistent measure—a Lexile measure—to track student literacy. A list of assessments and programs that are linked with the Lexile and Quantile Frameworks is available at www.Lexile.com and www.Quantiles.com.

State Department of Education Responsibilities

Education departments are responsible for the following aspects of the linking study:

- Providing MetaMetrics with the items, passages, administration manuals and psychometric information (technical manual with item difficulties) for the tests being linked with the Lexile or Quantile Frameworks.
- Identifying and recruiting the student sample.
- Providing MetaMetrics with a student information file. The file should include demographic and school information for each student being tested.
- Providing MetaMetrics with an electronic data file from the test administration that includes item-level data for the assessment.
- Consulting with MetaMetrics to develop customized interpretive materials, such as Lexile and Quantile maps and Lexile- and Quantile-related content for the state department of education Web site.

Funding

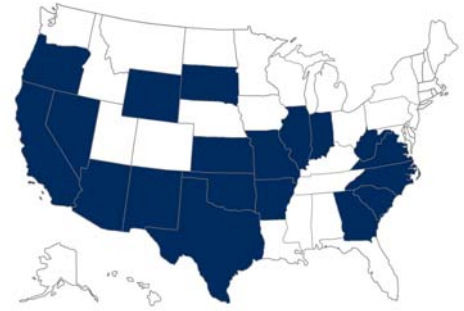
Funding for Lexile and Quantile measures comes from a variety of sources, such as state funds, assessment funds, reading funds and federal programs. For example, Virginia subsidizes its Lexile program with federal response to intervention (RTI) funds. According to the state's federal program director, RTI language describes Virginia's Lexile initiative perfectly. "With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities." Because the Lexile Framework puts both formative and state assessments on the same scale, it connects day-to-day learning with year-to-year growth. In this way, Lexile and Quantile measures are powerful tools for tracking progress and individualizing instruction—the intent of RTI funding.

Benefits of the Lexile and Quantile Frameworks

The Lexile and Quantile Frameworks provide supplemental metrics of student progress that resonate with educators and parents because:

- The measures describe what students' reading and mathematics test scores mean in tangible, concrete terms. Educators can easily communicate with parents about students' learning needs and accomplishments.
- The measures are actionable. Educators and parents can use Lexile and Quantile measures to connect students with resources that are targeted to their ability levels.
- The measures provide more information without additional testing. Educators can use the measures to differentiate instruction across the curriculum and grade levels.
- The measures provide educators with constant metrics for forecasting student performance on year-end tests, based on day-to-day work in the classroom.

Figure 1: State Assessments and Adoptions



- Arizona's Instrument to Measure Standards*
- Arkansas' Benchmark Tests
- California English-Language Arts Standards Test
- Georgia Criterion-Referenced Competency Tests and Georgia High School Graduation Tests
- Illinois Standards Achievement Test
- Kansas State Assessments of Reading
- Missouri Assessment Program
- Nevada Assessment Program
- New Mexico Standards-Based Assessment
- North Carolina End-of-Grade Tests and English I End-of-Course Test*
- Oklahoma Core Curriculum Tests
- Oregon Reading/Literature Knowledge and Skills Test
- Proficiency Assessments for Wyoming Students*
- South Carolina Assessment Program
- Texas Assessment of Knowledge and Skills*
- Virginia Standards of Learning Tests
- West Virginia WESTEST*

*State also reports Quantile measures.

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MetaMetrics, Inc., a privately held educational measurement company, develops scientifically based measures of student achievement that link assessment with instruction, foster better educational practices, and improve learning by matching students with materials that meet and challenge their abilities. The company's team of psychometricians developed the widely adopted Lexile Framework for Reading; El Sistema Lexile para Leer, the Spanish-language version of the Lexile Framework; The Quantile Framework for Mathematics; and The Lexile Framework for Writing. In addition to licensing Lexile and Quantile measures to state departments of education, testing and instructional companies, and publishers, MetaMetrics delivers professional development, resource measurement and customized consulting services.

