



CONSULTING & DEVELOPMENT

MetaMetrics® works with state departments of education, testing and instructional companies, and publishers to deliver customized consulting services for raising student achievement across the curriculum.

MetaMetrics' psychometric background and experience in all aspects of educational measurement enable its clients—and its clients' customers—to realize the benefits of measuring and monitoring student performance on developmental scales:

The Lexile Framework® for Reading;
El Sistema Lexile® para Leer, the Spanish-language version of the reading framework;
The Quantile Framework® for Mathematics;
and The Lexile Framework for Writing.





► Item and test development

MetaMetrics develops written, computer-adaptive and computer-based assessments that are linked with the Lexile Framework or the Quantile Framework. The company worked with Pearson Education to develop PASeries Reading and PASeries Mathematics, collaborating on the development and review of passages and items, design of the scoring and reporting algorithms, and creation of the instructional and curriculum links. Each test that MetaMetrics creates achieves the highest level of curricular alignment possible, while maintaining its security and psychometric integrity.

- **Test Development:** MetaMetrics develops assessments that measure constructs of interest, such as reading, writing and mathematics achievement. The company reviews test items for their potential impact on the performance of students with disabilities and eliminates or revises items that could negatively impact student performance. MetaMetrics has developed items for numerous third-party products, including Achieve3000's Kidbiz3000 and Teenbiz3000 and Voyager Expanded Learning's Passport Reading Journeys and VMath Texas Edition.
- **Item development and review:** MetaMetrics develops items aligned with specific specifications and validates curricular matches, content, thinking-skill level, difficulty level and appropriateness for use with diverse student populations, including students with disabilities and those identified as limited English proficient.

► Technology Applications

MetaMetrics strives to link assessment with instruction through innovative technology. The company's engineering team works with clients to develop customized software solutions and to enhance existing applications by integrating Lexile® or Quantile® measures as the means to match students with targeted materials and activities.

- **Feasibility of computer-adaptive and computer-based tests:** MetaMetrics works with testing companies to design computer-adaptive and computer-based assessments of student reading and mathematics achievement that are linked with the Lexile or Quantile Frameworks. The company collaborated on the development of Scholastic's SRI-Interactive and EdGate's Total Reader.
- **Scoring applications:** MetaMetrics works with its clients to understand the intricacies of each assessment and design the best scoring protocol to meet the reporting needs of the client. The company has developed the following types of applications: Bayesian scoring, ability forecasting and growth modeling.

► Psychometric Services

MetaMetrics' research and development team is actively engaged in several areas of basic and applied research, employing methodologies such as unidimensional and multi-dimensional Rasch models and the paired comparison Rasch model. The company uses measurement programs, such as WINSTEPS and RUMM2020, and industry-standard statistical software, such as SAS, to ensure the integrity of its research. In addition, MetaMetrics can also create custom code to fit a specific project.

- **Longitudinal growth modeling and vertical equating:** MetaMetrics works with state departments of education, districts and schools to translate student data into a common metric—Lexile or Quantile—to create a complete picture of reading and mathematics achievement over a student's developmental lifespan.
- **Higher education readiness:** The Lexile Framework provides a unique perspective on student readiness for postsecondary education and other life endeavors. MetaMetrics has contributed to the national discussion on this topic through its research and presentations to education agencies and other organizations.
- **Accountability and reporting:** Although MetaMetrics does not develop reporting systems for educational accountability, the company works with clients to design and produce educational performance reports.
- **Evaluating parameter and scale drift, Rasch model dimensionality and equating efficacy:** MetaMetrics is actively involved in extending the Rasch model in new directions, such as the merging of developmental reading and mathematics theory with Rasch measurement principles.
- **Generalizability and reliability studies:** MetaMetrics' measurement precision studies collect the data that is required to support concerns that retesting would produce the same outcomes and decisions (e.g., summer school). The company's research focuses on new ways of communicating uncertainty to decision makers and parents.
- **Attitude and social measurement:** MetaMetrics' work in areas such as workforce readiness and capabilities complements its research in higher education readiness.
- **Conjoint measurement analysis:** MetaMetrics designs, produces and conducts data-analysis studies based on conjoint measurement theory. Due to the complex nature of this type of analysis, the company uses a hands-on development approach to ensure the best possible outcomes.

► Linking Studies

MetaMetrics can link the underlying scale of an assessment with the Lexile Framework or the Quantile Framework. Each linking study is custom built based on the design and constraints of the assessment. MetaMetrics develops a parallel test using the Lexile or Quantile scale, administers the test to a predetermined student sample, analyzes and compares the results of the linking test to those of the existing assessment, and develops conversion tables that enable students' reading or mathematics scores to be reported as a Lexile or Quantile measure. Linking an assessment to the Lexile or Quantile Frameworks establishes a vertical, developmental scale that educators, parents and students can use to monitor growth throughout the education lifecycle, regardless of which assessment the student takes. Linking studies can also be used to model expected growth using Bayesian scoring and link the results of formative assessments to high-stakes assessments. Lexile and Quantile measures are available from numerous standardized assessments.

► Resource Measurement

MetaMetrics has developed scientifically valid processes to establish a certified Lexile or Quantile measure for reading and mathematics materials.

- **Lexile resource measurement (English and Spanish):** MetaMetrics offers a range of services and online utilities that testing and instructional companies, publishers and registered users can use to determine the Lexile measure of a text, such as a book or article. Lexile resource measurement utilizes the Lexile Analyzer® to determine the reading demand of the text. The Lexile Analyzer is available in either a full-service or self-service text measurement model or can be licensed for inclusion in a third-party application. The Lexile Book Database can also be licensed for publication.
- **Quantile resource measurement:** MetaMetrics aligns the curriculum in mathematics textbooks, supplemental materials and instructional programs with the Quantile Framework and then calibrates the material associated with each lesson onto the Quantile scale. Quantile resource measurement identifies the mathematical concepts and skills in a lesson and then calculates the Quantile measure of that lesson. Each lesson is measured individually in order to obtain an accurate assessment of the mathematical content of the entire product. MetaMetrics offers full-service Quantile resource measurement and licenses for either the QTaxon database or existing Quantile measures.
- **Readability of tests:** Using the Lexile Framework, various forms of an assessment can be analyzed for readability. MetaMetrics can examine how the reading difficulty of a test changes over time and how it compares to other reading assessments of a similar nature. The company can also compare the reading demand of a content-area assessment with that of a reading test at the same level, or an assessment written in Spanish versus one written in English.



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