



Linking DIBELS® Oral Reading Fluency with The Lexile Framework® for Reading





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What is The Lexile Framework® for Reading?

The Lexile Framework for Reading is a psychometric system for matching readers with texts of appropriate difficulty. With the Lexile Framework, both the reader and the text can be placed on the same measurement scale. A Lexile® measure is the numeric representation of an individual's reading ability or a text's readability (or difficulty), followed by an "L" (Lexile). The Lexile scale is a developmental scale for reading that ranges from below 0L for emerging readers and beginning texts to above 1700L for advanced readers and texts. Values at or below 0L are reported as Beginning Reader (BR).

A Lexile text measure is obtained through analyzing the readability of a piece of text. The Lexile Analyzer®, a software program specially designed to evaluate the reading demand of text, analyzes the text's semantic and syntactic characteristics and assigns it a Lexile measure. A multi-step process is required to prepare the text before it is submitted to the Lexile Analyzer for a measure. Noting the Lexile measure of a text can assist in choosing reading materials that present an appropriate level of challenge for a reader.

A Lexile reader measure is typically obtained by administering a test of reading comprehension to a reader. When a test has been linked with The Lexile Framework for Reading through a field study, a Lexile measure for the reader can be reported.

Developed by the psychometric research company MetaMetrics®, Inc., the early work that led to The Lexile Framework for Reading was funded, in part, by a series of grants from the National Institutes of Child Health and Human Development. The Lexile Framework reporting scale is not bounded by grade level, although typical Lexile measure ranges have been identified for students in specific grades. Because the Lexile Framework reporting scale is not bounded by grade level, it makes provisions for students who read below or beyond their grade level.

Extensive information about the development of The Lexile Framework for Reading can be found in the "Researchers" section of the Lexile Web site at www.Lexile.com. A white

paper (Lennon & Burdick, 2004) entitled, "The Lexile Framework as an Approach for Reading Measurement and Success," (www.lexile.com/PDF/Lexile-Reading-Measurement-and-Success-0504.pdf) provides detailed descriptions of each component of The Lexile Framework for Reading.

Study to Link DIBELS with The Lexile Framework for Reading

The study to link the Dynamic Indicators of Basic Early Literacy Skills (DIBELS®) with the Lexile Framework began with initial discussions in 2004–2006 between MetaMetrics, Roland Good of Dynamic Measurement Group, Inc., and Wireless Generation. In fall 2006, a study was designed to link The Lexile Framework for Reading with the DIBELS Oral Reading Fluency (ORF) measure. Data was collected between January and May 2007 and analyses were completed in October 2007.

Assessments. Each student in the study was administered the DIBELS ORF measure and a Lexile linking test.

The DIBELS ORF measure is collected from mid-Grade 1–Grade 3. ORF is a standardized set of passages and administration procedures designed to a) identify children who may need additional instructional support, and b) monitor progress toward instructional goals. The passages are calibrated for the goal level of reading for each grade level. The DIBELS ORF passages were generated as a set of 26 passages for first grade, and 29 passages for each of second and third grades. Twenty passages are for progress monitoring. Three passages are used for each benchmark assessment, with two benchmark assessments in first grade and three benchmark assessments in second and third grade. The DIBELS ORF passages were developed and refined as a group to obtain approximate equivalence across the benchmark assessments and with the progress monitoring assessments. The results from the administration of the middle passage of the benchmark assessment were used in this study.

The Lexile linking test consisted of four levels. Using items from the Lexile item bank, Lexile linking tests were developed for administration at kindergarten and grades 1–3. Using

response-illustrated items, the Lexile Framework measures reading comprehension by focusing on skills readers use when studying written materials sampled from various content areas. These skills include referring to details in the passage, drawing conclusions, and making comparisons and generalizations. Lexile items do not require prior knowledge of ideas outside of the passage, vocabulary taken out of context or formal logic. The Kindergarten-level test consisted of 12 items presented as pictures where the student was asked to identify the word that best matched the picture and 11 items where the student was asked to choose the best word to complete the sentence. The Grade 1 test consisted of ten of the 12 picture items and 25 single-sentence reading comprehension items. The Grade 2 test consisted of 35 reading comprehension items (single sentences to paragraphs) and the Grade 3 test consisted of 40 reading comprehension items (single sentences to paragraphs). Test specifications were as follows: Kindergarten (-263L); Grade 1 (85L); Grade 2 (418L); and Grade 3 (474L).

Sample. The sample for this study consisted of students in kindergarten and grades 1–3 in Seminole County (Fla.) Schools (three schools) and Cabell County (W.V.) Schools (five schools). A total of 2,300 students participated in the study by taking the DIBELS ORF and the Lexile linking test.

Table 1. Sample of students administered the Lexile linking test

Sample	Kindergarten	Grade 1	Grade 2	Grade 3
Florida	394	383	361	350
West Virginia	230	210	205	167
Total	624	593	566	517

Analyses. The data for the Lexile linking tests was analyzed using the Winsteps item-response theory model (Rasch model). There was a high degree of agreement between the combined grades analysis and the individual grades analyses with respect to the relative item difficulties. It was concluded that one construct was being measured across all four grade levels.

Table 2. Initial sample statistics for Lexile linking test, by grade

Grade	N	Lexile measure Mean (SD)	Minimum Lexile measure	Maximum Lexile measure
K	601	-307.95 (354.51)	-1163	467
1	443	73.00 (371.58)	-1136	822
2	533	426.72 (291.37)	-882	1180
3	528	601.61 (315.07)	-740	1270

The samples were examined and students were removed from further analysis for the following reasons:

- correctly answered all of the items (105 students) or incorrectly answered all of the items (32 students), and
- exhibited infit coefficients greater than 1.5 or outfit coefficients greater than 2.0 (126 students).

The final Lexile linking test sample consisted of 1,842 students.

Table 3. Final sample statistics for Lexile linking test, by grade

Grade	N	Lexile measure Mean (SD)	Minimum Lexile measure	Maximum Lexile measure
K	531	-475.31 (251.89)	-1058	133
1	372	45.62 (300.08)	-871	613
2	473	477.24 (233.89)	-194	964
3	466	598.77 (235.18)	-73	1042

The Lexile linking test results were then matched with the DIBELS ORF results. A total of 1,719 (93.3%) of the students had complete data (Kindergarten, N = 511 [96.2%]; Grade 1, N = 363 [97.6%]; Grade 2, N = 438 [92.6%]; and Grade 3, N = 407 [87.3%]). Since DIBELS ORF is not administered to kindergarten students, only grades 1–3 results were used in the final linking analyses.

Table 4. Final matched sample statistics for Lexile linking test and DIBELS ORF, by grade

Grade	N	Lexile measure Mean (SD)	DIBELS ORF Mean (SD)	<i>r</i>
1	363	49.87 (297.94)	52.92 (34.73)	.795
2	438	481.79 (233.88)	91.18 (31.96)	.687
3	407	608.65 (229.04)	106.74 (31.39)	.664

Using the results in Table 4 and linear equating methodology, the following linking functions were developed to express DIBELS ORF scores in the Lexile metric:

- **Grade 1:** Lexile measure = $8.57880480946367 * \text{ORF} + -404.116126386124$
- **Grade 2:** Lexile measure = $7.31829214450681 * \text{ORF} + -185.479047114992$
- **Grade 3:** Lexile measure = $7.29760592369798 * \text{ORF} + -170.258972906792$

Interpretations and Uses of Lexile Measures

The Lexile Framework for Reading provides teachers and educators with tools to help them link assessment results with subsequent instruction. When a reader takes an assessment that is linked with the Lexile Framework, his or her results are reported as a Lexile measure. This means, for example, that a student whose reading ability has been measured at 500L is expected to read with 75-percent comprehension a book that also is measured at 500L. When the reader and text are matched (same Lexile measures), the reader is “targeted.” A targeted reader reports confidence, competence and control over the text.

When reading a book within his or her Lexile range (50L above his or her Lexile measure to 100L below), the reader should comprehend enough of the text to make sense of it, while still being challenged enough to maintain interest and learning. When a text measure is 250L above the reader’s measure, comprehension is predicted to drop to 50 percent and the reader will likely experience frustration and inadequacy. Conversely, when a text measure is 250L below the reader’s measure, comprehension is predicted to go up to 90 percent and the reader is expected to experience control and fluency. When reading a book within his or her Lexile range (50L above his or her Lexile measure to 100L below), the reader is forecasted to comprehend enough of the text to make sense of it, while still being challenged enough to maintain interest and learning.

Using The Lexile Framework for Reading to Select Books.

Teachers, parents and students can use the tools powered by the Lexile Framework to plan instruction (go to www.Lexile.com to access the Lexile Book Database). When teachers provide parents and students with lists of titles that match the students' Lexile measures, they can then work together to choose appropriate titles that also match the students' interest and background knowledge. *The Lexile Framework does not prescribe a reading program, but it gives educators more control over the variables involved when they design reading instruction.* The Lexile Framework yields multiple opportunities for use in a variety of instructional activities. After becoming familiar with the Lexile Framework, teachers are likely to think of a variety of additional creative ways to use this tool to match students with books that students find challenging, but not frustrating.

Remember, there are many factors that affect the relationship between a reader and a book. These factors include text content, age of the reader, interests of the reader, suitability of the text, and text difficulty. The Lexile measure of a text, a measure of text difficulty, is a good starting point in the selection process, but other factors also must be considered. The Lexile measure should never be the only piece of information used when selecting a text for a reader.

Communicate with Parents Meaningfully to Include Them in the Educational Process.

Teachers can make statements to parents such as, "Your child will be able to read with at least 75-percent comprehension these kinds of materials which are at the next grade level." Or, "Your child will need to be able to increase his/her Lexile measure by 400L–500L (Lexile) in

the next few years to be prepared for college reading demands. Here is a list of appropriate titles your child can choose from for reading this summer."

Improve Students' Reading Fluency.

Educational researchers have found that students who spend a minimum of three hours a week reading at their own level for their own purposes develop reading fluency that leads to improved mastery. Not surprisingly, researchers also have found that students who read age-appropriate materials with a high level of comprehension also learn to enjoy reading.

Apply Lexile Measures Across the Curriculum.

Over 150 publishers have Lexile measures for their trade books and textbooks, enabling educators to link all of the different components of the curriculum to more effectively target instruction. With a student's Lexile measure, teachers can connect him or her with tens of thousands of books (www.Lexile.com) and tens of thousands of newspaper and magazine articles (through periodical databases) that also have Lexile measures.

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. Initially funded with grants from the National Institutes of Health, the company 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.





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