Why is it important for mathematics teachers to know about Lexile measures?

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Reading and Mathematics

- Teachers need to develop students' reading skills as they teach the mathematics content.

- Mathematics standardized assessments are grounded in real-world contexts requiring specialized reading skills.

Examples of Readability Measures

- The Flesch Formulas
  - Flesch Reading Ease
  - Flesch-Kinkaid Grade Level
- ATOS Readability Formula
- Lexile Framework
- Coh-Metrix Psycholinguistics

Why focus on Lexile measures?

- Lexile measures for books are widely reported by publishing companies.

- Some school districts use Lexile measures to determine appropriateness of reading materials for students.

- TEA previously correlated ELA and Reading assessments to Lexile measures.

Lexile Measures

- Lexile measures were created by MetaMetrics.

- The Lexile Reading Measure assesses an individual's reading ability.

- The Lexile Text Measure determines the difficulty of text.

https://lexile.com/about-lexile/lexile-overview/

The Lexile Reader Measure

- Students are assigned a Lexile Reading Measure from a reading test or program.

- Lexile Reading Measures can range from below 200L for emerging readers to above 1600L for advanced readers.

https://lexile.com/about-lexile/lexile-overview/

The Lexile Text Measure

The Lexile Text Measure assesses how difficult a text is to read based on two factors:

– Average sentence length (more important)

– Average word frequency (less important)

https://lexile.com/about-lexile/lexile-overview/

The Lexile Text Measure

- Sentence length is used as a proxy for sentence complexity. Longer sentences are typically more grammatically complex.

- Word frequency is measured by how many times a word appears in MetaMetrics' corpus of texts. It is used as a proxy for vocabulary difficulty. Reading passages with rare words tend to be rated as more difficult texts.

Lexile Text Analyzer

Get a Lexile Text Measure

You can use our online tools to determine the estimated Lexile® measure of edited, conventional prose text. Just follow our guidelines for preparing a text, upload it, and the Lexile® measure will be displayed.

Looking for the Spanish Lexile Analyzer?

Submit a file

File to Analyze*

Choose File   No file chosen

Submit

Online help and user guides

The help links to the left detail how to use either the English Lexile Analyzer or Spanish Lexile Analyzer to get an instructionally useful estimated Lexile measure. You may also view the user guide here.

https://lexile.com/analyzer/

The Lexile Text Measure

- Specialized content language is not considered in calculating the Lexile Text Measure – in fact vocabulary not in the corpus is ignored by the Lexile Text Analyzer.

- A text is assigned a numerical value from 0L to 2000L, roughly corresponding to the text's difficulty, using a Lexile Text Analyzer.

Examples of Lexile Measure

"Sam saw that it was raining. So he went home. On his way home, Sam saw his friend John. He said hello, and they talked about baseball. When Sam got home, his mom gave him a big hug."

Estimated Lexile measure: 380L

Grade-level equivalent: 2.1*

Mean sentence length: 7.60

Mean log word frequency: 3.77

Word count: 38

*http://www.cnyric.org/tfiles/folder1052/LexileConversionChart.pdf

Examples of Lexile Measure – Harder Vocabulary

"Sam noticed that it was raining. So he journeyed home. On his way home, Sam saw his acquaintance John. He said "Salutations," and they conversed regarding baseball. When Sam arrived home, his mother gave him an enormous hug."

Estimated Lexile measure: 530L

Grade-level equivalent: 2.9

Mean sentence length: 7.60

Mean log word frequency: 3.38

Word count: 38

Examples of Lexile Measure – Harder Vocabulary

"Ilmari noticed that it was raining. So he journeyed home. On his way home, Ilmari saw his acquaintance Kalevi. He said "Salutations," and they conversed regarding baseball. When Ilmari arrived home, his mother gave him an enormous hug."

Estimated Lexile measure: 530L

Grade-level equivalent: 2.9

Mean sentence length: 7.60

Mean log word frequency: 3.38

Word count: 38

Examples of Lexile Measure – Longer Sentences

"Sam saw that it was raining, so he went home; on his way home, Sam saw his friend John. He said "hello," and they talked about baseball. When Sam got home, his mom gave him a big hug."

Estimated Lexile measure: 540L

Grade-level equivalent: 2.9

Mean sentence length: 9.50

Mean log word frequency: 3.78

Word count: 38

Examples of Lexile Measure – Longer Sentences and Harder Vocabulary

"Sam noticed that it was raining, so he journeyed home; on his way home, Sam saw his acquaintance John. He said "Salutations," and they conversed regarding baseball. When Sam arrived home, his mom gave him an enormous hug."

Estimated Lexile measure: 690L

Grade-level equivalent: 4.0

Mean sentence length: 9.50

Mean log word frequency: 3.39

Word count: 38

The table below shows examples of the typical reader and text measures for various grades. Remember that about 50 percent of the students are reading higher or lower than these ranges.

Typical Reader and Text Measures

Grade	Reader Measures (Interquartile Range, Mid-Year)	Text Measures (from the Lexile Map)
1	Up to 300L	200L to 400L
2	140L to 500L	300L to 500L
3	330L to 700L	500L to 700L
4	445L to 810L	650L to 850L
5	565L to 910L	750L to 950L
6	665L to 1000L	850L to 1050L
7	735L to 1065L	950L to 1075L
8	805L to 1100L	1000L to 1100L
9	855L to 1165L	1050L to 1150L
10	905L to 1195L	1100L to 1200L
11 and 12	940L to 1210L	1100L to 1300L

Lexiles: A System for Measuring Reader Ability and Text Difficulty , a Guide for Educators by Scholastic

Sample Booklist with Lexile Measures

1700L	Discourse on the Method and Meditations on First Philosophy by René Descartes
1520L	A Modest Proposal by Jonathan Swift
1400L	The Scarlet Letter by Nathaniel Hawthorne
1200L	War and Peace by Leo Tolstoy
1100L	Pride and Prejudice by Jane Austen
1000L	Black Beauty by Anna Sewell
860L	Julie of the Wolves by Jean Craighead George
770L	The Giver by Lois Lowry
560L	Sarah, Plain and Tall by Patricia MacLachlan
400L	Frog and Toad Are Friends by Arnold Lobel
300L	Clifford's Manners by Norman Bridwell
220L	Play Ball, Amelia Bedelia by Peggy Parish

http://www.hinsdalelibrary.info/wp-content/uploads/2009/05/lexile-article-42209-ta.pdf

Lexile Measures of Documents

1080L	CD-DVD Player Instructions
1150L	Microsoft Windows User Manual
1150L	GM Protection Plan
1170L	Installing Your Child Safety Seat
1260L	Federal Tax Form W-4
1270L	Application for a student loan
1280L	Medical Insurance Benefits PKG.
1360L	Aetna Health Care Discount Form

Source: Dr. William R. Daggett, CCSSO Summer Institute Presentation, July 2003

Sample Lexile Measures
for 2013 STAAR Mathematics items

3rd Grade

Pam has 18 gold medals, 12 silver medals, and 9 bronze medals in a box. She will choose 1 of these medals at random. Which statement about Pam's choice is true?

A) It is certain that Pam will choose a gold medal.

B) Pam is less likely to choose a bronze medal than a silver medal.

C) Pam is more likely to choose a silver medal than a gold medal.

D) It is impossible for Pam to choose a bronze medal.

Estimated Lexile measure: 850L
Grade-level equivalent: 5.5
Correct responses: 51%

3rd Grade

Vandra sold the following number of lightbulbs during three months at a store. She sold 573 lightbulbs in January. She sold 822 lightbulbs in February. She sold 738 lightbulbs in March. How many lightbulbs did Vandra sell during these three months?

F)   2,023
G)   2,133
H)   2,223
J)   2,033

Estimated Lexile measure: 590L

Grade-level equivalent: 3.3

% correct responses: 77%

5th Grade

Owen lives 145.25 kilometers from Houston, Texas. Sharon lives 209.5 kilometers from Houston. What is the difference between these two distances?

F) 64.25 km

G) 54.35 km

H) 124.30 km

J) 144.35 km

Estimated Lexile measure: 610L

Grade-level equivalent: 3.4

% Correct responses: 85%

7th Grade

The list below shows the number of minutes Addison spent reading on each of six days. 90, 60, 89, 94, 60, 93. Which two measures of these data best describe the typical number of minutes Addison spent reading each day?

F) Mean and mode
G) Mean and median
H) Mode and range
J) Median and range

Estimated Lexile measure: 1090
Grade-level equivalent: 8.8
% Correct responses: 36%

7ᵗʰ Grade

Angelo's pet rabbit weighs 1 pound less than twice the weight of Carmen's pet rabbit. Angelo's rabbit weighs 9 pounds. Which equation can be used to find w, the weight of Carmen's pet rabbit?

F) $9 = 2w + 1$

G) $9 = 2w - 1$

H) $w - 9 = 1$

J) $w + 9 = 1$

Estimated Lexile measure: 950L

Grade-level equivalent: 6.7

% Correct responses: 76%

Algebra I

A painter charges $35 per hour for labor plus $40 for a ladder rental when he paints a house. The customer provides the paint. The total charge to paint a customer's house was $950. How many hours did the painter spend painting this house?

F) 12 2/3 h
G) 28 h
H) 23 h
I)   Not here

Estimated Lexile measure: 810L
Grade-level equivalent: 5.1
% Correct responses: 83%

How should our knowledge of Lexile measures and text readability inform instruction?

Helping students understand and solve complex mathematics problems

- Identifying readability issues

- Identifying mathematics content issues

Helping students understand and solve complex mathematics problems

- Most students need to experience solving complex problems.

- What instructional strategy could I use to help students understand the context of the problem?

The Complex Problem

Ann is giving a party for 12 friends. She wants to give each of her 12 friends 2 or 4 gifts. Ann's mother will only give her $48.00 to spend on gifts. Ann plans to spend the same amount on each gift. How much will Ann spend per gift if each guest receives 2 gifts? How much will she spend per gift if each guest receives 4 gifts?

Monday Problem

Ann is giving a party for 12 friends. She wants to give each of her friends 4 small gifts. How many gifts does Ann need to buy for her 12 friends?

Estimated Lexile measure 680L
Grade-level equivalent 3.9

Tuesday Problem

Ann is giving a party. She wants to give each of her 12 friends 2 or 4 gifts. Ann's mother will only give her $48.00 to spend on gifts. Ann plans to spend the same amount on each gift. How much will Ann spend per gift if each guest receives 2 gifts?

Estimated Lexile measure 760L
Grade-level equivalent 4.6

Wednesday Problem

Ann is giving a party for 12 friends. She wants to give each of her 12 friends 2 or 4 gifts. Ann's mother will only give her $48.00 to spend on gifts. Ann plans to spend the same amount on each gift. How much will Ann spend per gift if each guest receives 2 gifts? How much will she spend per gift if each guest receives 4 gifts?

Estimated Lexile measure 840L
Grade-level equivalent 5.4

2014 STAAR Released Question
Grade 5

Frances used small, medium, and large cups to serve punch. She used 243 medium cups. She used 79 more medium cups than large cups. She used 56 more small cups than large cups.   How many small cups did Frances use to serve punch?

Estimated Lexile measure 720L
Grade-level equivalent 4.2%
Correct responses 49%

2014 STAAR Released Question
Grade 7

Mr. Nelson sold 147 bags of popcorn and 216 bottles of water in 3 days. At this rate, how many more bottles of water than bags of popcorn will Mr. Nelson sell in 5 days?

Estimated Lexile measure 1150L
Grade-level equivalent 10.0%
Correct responses 43%

Why is it important for mathematics teachers to know about Lexile measures?