

Scholastic Singapore: Lexile[®] Measurement and Analysis of National Benchmark Exams 2012-2015

Scholastic Literacy Pro (LitPro) is a reading assessment program which provides immediate, actionable data on students' reading levels and growth over time. Scholastic LitPro helps educators differentiate instruction, make meaningful intervention plans, forecast growth toward grade-level state tests, and demonstrate accountability. LitPro reports student reading ability in Lexile[®] measures.

Scholastic Asia has developed a Lexile Framework for Reading Map for Singapore that illustrates typical English language text demands for Singapore school levels in conjunction with information on reader performance. Reader performance is based on the text demands of Singapore National Benchmark Exams. Using The Lexile Framework for Reading allows teachers, students, parents, and community leaders to contextualize English expectations for Singapore students.

What is the Lexile Framework for Reading?

The Lexile Framework for Reading is a scientific approach to reading and text measurement. A unique feature of the Lexile Framework for Reading is the ability to place an individual's reading ability and a text's difficulty on the same scale with the Lexile serving as the unit of measure as denoted by a number followed by an "L". A Lexile reader or student measure represents a person's reading ability on the Lexile scale. A Lexile text measure represents a text's difficulty level on the Lexile scale. This unified scale provides a means of monitoring growth, benchmarking, and connecting students with developmentally appropriate material by way of the single metric.

An individual's Lexile measure is determined by one's performance on a standardized reading assessment, such as Scholastic LitPro. Scholastic LitPro is a computer-adaptive test which measures how well students read literature and expository texts of varying difficulties. The reader's score on LitPro is reported as a Lexile measure from below 0L to above 1600L. A higher Lexile reader measure represents a higher level of reading ability on the Lexile scale. When readers score at or below 0L, a BR (Beginning Reader) code is displayed on their report.

Like the reader measures, Lexile text measures are also reported on the Lexile scale, from below 0L to above 1600L. Texts with measures below 0L are given a BR code. The lower a text's Lexile measure, the easier it should be for a reader to comprehend. For example, a text with a Lexile measure of 850L should be easier for a reader to comprehend than a text with a measure of 950L.

A Lexile text measure is obtained through analyzing the readability of a piece of text. A multi-step process is required to prepare the text before it is submitted to the Lexile[®] Analyzer for a measure. As part of the text measurement process, the text is split into 125-word segments or "slices" – about the length of a long paragraph. Each segment is then analyzed for word

frequency and sentence length. Words are compared against the nearly 600-million-word Lexile Corpus, which was compiled from a variety of sources and genres, to determine how frequently the words appear in common usage. The Lexile Analyzer has been updated to account for British English vocabulary and spelling variations. Because the initial analyzer was developed using typical U.S. vocabulary, a study was conducted in 2007 to ascertain proper weight and recognition of British variations. The number of words in each sentence is counted, and editing rules are applied to ensure the word count is calculated consistently from text to text. These values are used by the Lexile Analyzer to produce a Lexile measure for each 125-word text slice. To obtain the Lexile measure for the whole text, the Lexile Analyzer incorporates the measures of all of the slices.

A foundation of The Lexile Framework for Reading is the Rasch model. This psychometric model is used to forecast the expected comprehension of a text with a specific Lexile measure by a reader with a specific Lexile measure. For example, if a reader has a Lexile measure of 1000L, he will be forecasted to comprehend approximately 75 percent of a book with the same Lexile measure (1000L). This 75-percent comprehension rate is called “targeted” reading. This rate is based on independent reading; if the reader receives assistance, the comprehension rate will likely increase. The target reading rate is the point at which a reader should comprehend enough to understand the text, but will also face some reading challenge.

More extensive information about the development of The Lexile Framework for Reading can be found in the “Researchers” section of the Lexile website (www.Lexile.com). A white paper entitled *The Lexile Framework as an Approach for Reading Measurement and Success* provides detailed descriptions of each component of The Lexile Framework for Reading.

Singapore National Reading Benchmark Exams

In an effort to determine English language text demands for students in Singapore, reading comprehension passages from national examinations were examined. The selected examinations were chosen due to their importance in a student’s academic progression from primary to secondary school and onward to university. The skills demonstrated in reading on a particular exam are dependent on the complexity and accessibility of the text. Texts are expected to increase in difficulty as students work through the English language curriculum. This report includes measures exclusively from exam editions 2012 to 2015. Previous reports may be referred to for comparisons to passage Lexile measures for exams from earlier years: *Scholastic’s text measurement and analysis for Singapore*, 2011 and *Scholastic Singapore: National Benchmark Measurement and Analysis Update*, 2015.

Exams included in the current analyses are the Primary School Leaving Examination (PSLE), the General Certificate of Education Normal (Academic) Level (GCE N Level), the General Certificate of Education Ordinary Level (GCE O Level), and the General Certificate of Education Advanced Level (GCE A Level). *Tables 1-4* display the Lexile measures and associated word counts for selected passages across each exam.

The PSLE is given to all students in Singapore who are exiting primary school, and exam results affect secondary school placement. Students are typically placed into one of four academic streams: Special, Express, Normal (Academic), or Normal (Technical). Placement into either the Special or Express streams results in enrollment in a four-year program culminating in sitting for the GCE O Level exam. Students placed into the Normal streams would likewise be enrolled in four-year programs most often resulting in sitting for the GCE N Level exam with the possibility of an additional year of coursework followed by the opportunity to sit for the GCE O Level exam. The Ministry of Education allows for select Normal-stream students to sit for the GCE O Level exam directly. Students seeking university placement sit for the GCE A Level exam after two years of coursework at a Junior College or similar institution.

Table 1. PSLE Paper 2, 2012-2015 passage measures.

Year	Comprehension Text 1		Comprehension Text 2	
	Lexile	Words	Lexile	Words
2012	1050L	409	870L	512
2013	810L	382	950L	510
2014	900L	340	780L	475
2015	930L	359	700L	498

Table 2. GCE N Level Paper 2, 2012-2015 passage measures.

Year	Passage 1		Passage 2		Passage 3*	
	Lexile	Words	Lexile	Words	Lexile	Words
2012	1350L	594	1250L	632		
2013	800L	97	1160L	524	1270L	546
2014	980L	103	1110L	547	1420L	604
2015	960L	101	1150L	492	1390L	537

**Year 2012 included 2 reading passages. A third was added in 2013.*

Table 3. GCE O Level Paper 2, 2012-2015 passages measures.

Year	Passage 1		Passage 2		Passage3*	
	Lexile	Words	Lexile	Words	Lexile	Words
2012	1330L	729	1250L	483		
2013	1030L	179	1020L	646	1340L	676
2014	1270L	155	1000L	665	1620L	718
2015	1030L	211	960L	597	1450L	628

**Year 2012 included 2 reading passages. A third was added in 2013*

Table 4. GCE A Level Paper 2, 2012-2015 passage measures.

Year	Passage 1		Passage 2*	
	Lexile	Words	Lexile	Words
2012	1360L	1099		
2013	1380L	1172		
2014	1400L	1126		
2015	1260L	579	1360L	532

*Years 2012 – 2014 contained one reading passage. A second passage was added in 2015.

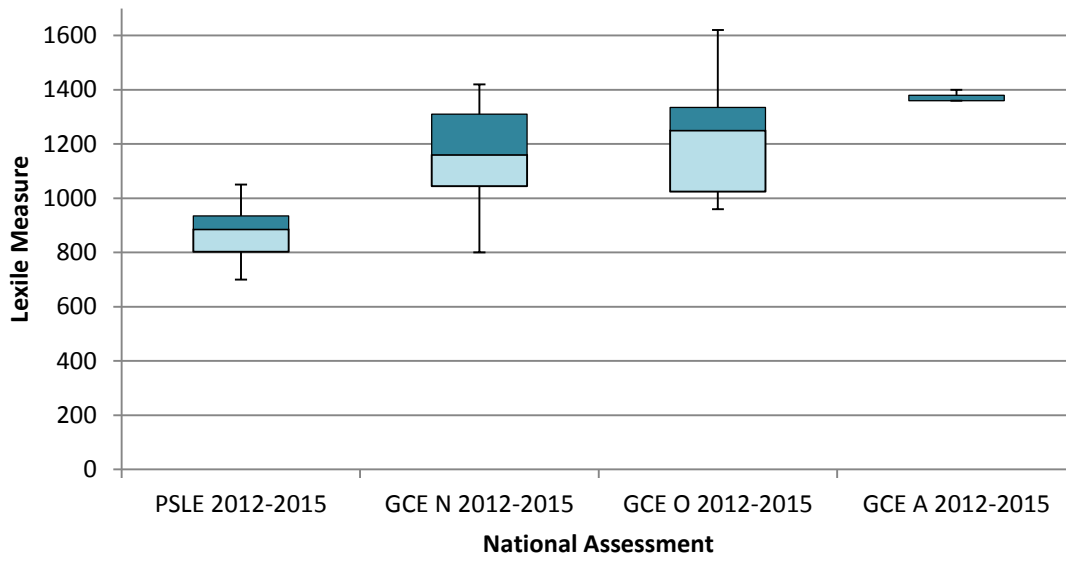
The descriptive statistics for each exam are presented in *Table 5*. The rows are as follows: *n*, the number of passages measured; Mean, the mean Lexile measure for each group of examination passages; Median, the median Lexile measure for each group of examination passages; SD, the standard deviation of the group; and the minimum and maximum Lexile measures for the group.

Table 5. Descriptive statistics for Singapore National Benchmark Exam passages.

	PSLE 2012-2015	GCE N 2012-2015	GCE O 2012-2015	GCE A 2012-2015
<i>n</i>	8	11	11	5
Min	700L	800L	960L	1260L
25 th Percentile	803L	1045L	1025L	1360L
Mean	874L	1167L	1209L	1352L
Median	885L	1160L	1250L	1360L
SD	109.41	195.15	216.72	54.04
75 th Percentile	935L	1310L	1335L	1380L
Max	1050L	1420L	1620L	1400L

Figure 1 presents the interquartile range of the Lexile measures in box-and-whisker plot format for the reading passages in each exam. The measures are arranged by exam and year range. Each box plot depicts the minimum text measure, the 25th percentile of the distribution of text measures, the median (50th percentile), the 75th percentile, and the maximum text measure for the respective group of assessment passages. *Table 5* shows the Lexile range in which 50% of passages were found for each assessment, this range is represented by the boxes within *Figure 1*. The passage Lexile measure medians are monotonically increasing across the exam types, which indicates increasing complexity of the texts across the exams through the progression from the PSLE to the GCE A Level.

Figure 1. Singapore National Assessment passage Lexile measure distribution.



References

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