



K-2 English Language Arts Reading Efficacy Study:

Exact Path and Lexile Score
Comparisons for the
2023-2024 School Year

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Executive Summary

In efforts to measure student reading growth and evaluate the effectiveness of the curriculum and teaching practices in place, a Pennsylvania-based cyber school engaged with an educational researcher to review test results for the 2023-2024 school year for students in grades K-2. The evaluation was designed to examine the following:

1 Do students demonstrate reading growth between testing windows 1, 2, and 3 using Exact Path scaled scores?

2 Do students' growth from Fall to Spring exceed the Lexile national norms?

The Pennsylvania-based cyber charter school provides full-time, remote education to students statewide. Specifically, kindergarten through second-grade students utilize Accelerate Education's online English Language Arts curriculum. The elementary student population exhibits a diverse range of ethnic backgrounds and educational needs, as detailed below:

Gender: 52% Male, 48% Female

Ethnicity:

- 60% White (Not Hispanic)
- 16% Black or African American (Not Hispanic)
- 6% Hispanic (Any Race)
- 3% Asian (Not Hispanic)
- 14% Multi-Ethnic (Not Hispanic)

Special Needs:

- 21% Students with Individualized Education Programs (IEPs)
- 4% English Language Learners

Socioeconomic Status: 48% Economically Disadvantaged

The Accelerate Education Curriculum is designed to meet students with varying needs and is structured with clean course setup, assessment strategy, and learning support to enhance student engagement and learning outcomes.

Each course has the following components:



Structured Course Setup

Each semester consists of 18 modules, each with five lessons. Students spend 60-75 minutes daily on their English Language Arts course work.



Science of Reading Approach

Lessons incorporate phonological awareness, phonics, fluency, vocabulary, and comprehension.



Varied Practice Embedded Throughout

Each module presents content in the areas of spelling, sight words, vocabulary, reading comprehension, grammar, phonics, fluency, and handwriting.



Independent Reading

Daily reading for 30-40 minutes to improve literacy skills. Teachers help students choose appropriate books. Students use a leveled reading program, RAZ Kids, to support their learning.



Workbooks

Students may be provided with an optional printed workbook, which is a companion to their online course, that contains activities for the student to complete and submit to their teacher for feedback.



Assessments

- Synchronous assessments every 6 modules
- Benchmark assessments every 9 modules
- Weekly quizzes on spelling, reading comprehension, vocabulary, and grammar (varies by grade)



Student Audio Recordings

Retelling and fluency checks reinforce reading and speaking skills.



Parental Involvement

Materials are provided for at-home “Learning Coaches” to provide guidance and support for students.

The structured approach, multi-modal assessments, personalized reading assignments, and parental support significantly enhance student engagement and learning outcomes. The inclusion of synchronous assessments and independent reading fosters critical thinking, literacy development, and knowledge retention, making the curriculum an effective educational model for young learners.

The assessment data that was evaluated from the Pennsylvania-based cyber school demonstrates significant student growth in reading across grades K-2, reinforcing the effectiveness of the Accelerate Education curriculum in fostering literacy development. Through a structured, data-driven approach, students are making measurable progress in both Lexile scores and scaled scores, indicating strong comprehension and reading proficiency gains.

Key Highlights of Student Growth

Kindergarten:



Lexile Growth: A moderate effect size (Cohen’s $d = 0.38$) with a statistically significant mean increase of 74.14 points, demonstrating early reading skill development.



Scaled Score Growth: Growth was highly significant, with a large effect size (Cohen’s $d = 0.89$ for Window 1 to 2 and 0.955 for Window 1 to 3), showing that foundational literacy skills are being successfully reinforced.



First Grade:

Lexile Growth:

A large effect size (Cohen's $d=0.86$), with a mean Lexile increase of 174.70 points, reflecting substantial improvements in reading proficiency.

Scaled Score Growth:

Strong reading growth, with large effect sizes (Cohen's $d = 0.833$), confirming that early readers are building fluency and comprehension skills at an accelerated rate.

Percentile Shift:

A 7% increase in students scoring above the 90th percentile, indicating higher overall performance.

Second Grade:



Lexile Growth:

Statistically significant increase of 150.95 points, with a large effect size (Cohen's $d = 0.78$), demonstrating continued literacy development.



Scaled Score Growth:

Meaningful gains in reading fluency, with a large effect size (Cohen's $d = 0.774$), confirming that students are progressing toward reading independence.



Percentile Shift:

A 27% increase in students performing above the 90th percentile, signaling strong skill acquisition and advanced reading capabilities.





Implications for Student Success

These results confirm that the Accelerate Education's structured and adaptive curriculum provides students with the tools they need to develop strong literacy skills, setting a foundation for future academic achievement. The data reflects not only growth across all performance levels, but also an increase in the number of high-achieving students, demonstrating that Accelerate Education reading interventions and instructional methods are effectively meeting students where they are and propelling them forward.

With statistically significant gains across multiple measures and large practical effect sizes, this analysis affirms that Accelerate Education is fostering measurable and meaningful growth in K-2 literacy development. These results validate their commitment to ensuring every student builds the reading skills necessary for lifelong learning and academic success.

Research Design

The full dataset was housed in an Excel spreadsheet containing Lexile scores, as well as Exact Path scaled scores for students in testing windows 1 (Fall), 2 (Winter), and 3 (Spring). After cleaning and reorganizing, the reading data was analyzed using Dependent Samples t tests, which produced the following results:

Kindergarten

Lexile Comparison

In the table below, there was a 1% increase in the number of students performing above the 90th percentile.

Grade Level	Testing Window	Below 50th Percentile	50th-75th Percentile	75th-90th Percentile	Above 90 th Percentile
K	1	0	0	8% (3/37)	92% (34/37)
	3	0	0	7% (3/44)	93% (41/44)

Lexile Growth

When the Lexile growth for Kindergarten from Diagnostic Testing Window 1 to 3 was analyzed with a sample size of 35, the mean difference was 74.14, increasing from Testing Window 1 to 3, which was statistically significant appearing to indicate growth ($t(34) = 2.268$, $p < 0.05$) with a Cohen’s d moderate effect size of 0.38, meaning that the growth was of moderate practical significance.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	KLexTW3	397.7143	35	180.27080	30.47133
	KLexTW1	323.5714	35	185.75194	31.39781

Paired Samples Test

		Paired Differences				Significance			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	t	df	One-Sided p	Two-Sided p
					LowerUpper				
Pair 1	KLexTW3 - KLexTW1	74.14286	193.43446	32.69639	7.69579140.58992	2.268	34	.015	.030

Exact Path Scaled Score Growth

For Kindergarten performance using 32 complete pairs of Testing window 1 compared with Testing window 2 scaled scores, there was a mean difference of 72.13, increasing from Diagnostic Testing window 1 to 2. This was statistically significant, appearing to indicate growth ($t(31) = 5.034, p < 0.05$) with a Cohen's d large effect size of 0.89, meaning the difference was of large practical significance.



Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Kindergarten Testing Window 2 Scaled Scores paired w T1SSp	913.3125	32	122.44405	21.64525
	Kindergarten Testing Window 1 Scaled Scores paired w T2SSp	841.1875	32	80.79901	14.28338

Paired Samples Test

		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	Kindergarten Testing Window 2 Scaled Scores paired w T1SSp - Kindergarten Testing Window 1 Scaled Scores paired w T2SSp	72.12500	81.05504	14.32864	42.90154	101.34846	5.034	31	<.001	<.001

To investigate if this growth was apparent in the third testing window, scaled scores pairs of Kindergarten Testing window 1 were matched and compared with Testing window 3. There were 31 complete pairs of Testing window 1 compared to Testing window 3 scaled scores, which produced a mean difference of 88.58, increasing from Diagnostic Testing window 1 to 3. This mean difference was statistically significant, appearing to indicate growth ($t(30) = 5.319, p < 0.05$) with a Cohen's large effect size of 0.955, meaning it was of large practical significance.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Kindergarten Testing Window 3 Scaled Scores paired w T1SSp	932.3871	31	122.26438	21.95933

Paired Samples Test

		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	Kindergarten Testing Window 3 Scaled Scores paired w T1SSp - Kindergarten Testing Window1 Scaled Scores paired w T3SSp	88.58065	92.73107	16.65499	54.56661	122.59468	5.319	30	<.001	<.001

Grade 1

Lexile Comparison

In the table below, there was a 7% increase in the number of students performing above the 90th percentile.

Grade Level	Testing Window	Below 50th Percentile	50th-75th Percentile	75th-90th Percentile	Above 90 th Percentile
1	1	0	15% (7/48)	56% (27/48)	29% (14/48)
	3	11% (4/36)	30% (11/36)	22% (8/36)	36% (13/36)

Lexile Growth

When the Lexile growth for Grade 1 from Diagnostic Testing window 1 to 3 was analyzed with a sample size of 34, the mean difference was 174.70, increasing from Testing window 1 to 3, which was statistically significant, appearing to indicate growth ($t(33) = 5.04, p < 0.05$) with a Cohen's d large effect size of 0.86, meaning that the growth was of large practical significance.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	G1LexTW3	523.0882	34	275.51059	47.24968
	G1LexTW1	348.3824	34	91.21005	15.64239

Paired Samples Test

		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	G1LexTW3 - G1LexTW1	174.70588	202.11361	34.66220	104.18511	245.22665	5.040	33	<.001	<.001

Exact Path Scaled Score Growth

For Grade 1 performance using 38 complete pairs of Testing window 1 compared with Testing window 2, scaled scores resulted in a mean difference of 65.94, increasing from Diagnostic Testing window 1 to 2. This mean difference was statistically significant, appearing to indicate growth ($t(37) = 5.135$, $p < 0.05$) with a Cohen's d large effect size of 0.833, meaning it had large practical significance.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Gr1Testing Window 2 Scaled Scores	938.7895	38	108.93047	17.67085
	Gr1 Testing Window 1 Scaled scores paired w T2 SS	872.8421	38	86.48716	14.03007

Paired Samples Test

		Paired Differences					Significance			
		95% Confidence Interval of the Difference								
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	Gr1Testing Window 2 Scaled Scores - Gr1 Testing Window 1 Scaled scores paired w T2 SS	65.94737	79.16420	12.84213	39.92674	91.96799	5.135	37	<.001	<.001

To investigate if this growth was apparent in the third testing window, scaled scores of Grade 1 Testing window 1 were matched and compared with Testing window 3. There were 29 complete pairs of Testing window 1 compared to Testing window 3 scores. This produced a mean difference of 92.17, increasing from Diagnostic Testing window 1 to 3, which was statistically significant, appearing to indicate growth ($t(28) = 4.463$, $p < 0.05$) with a Cohen's d large effect size of 0.829, meaning it had a large practical significance.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Gr1Testing Window 3 Scaled Scores	958.0000	29	138.68155	25.75252
	Gr1 Testing Window 1 Scaled scores paired w T3 SS	865.8276	29	89.49145	16.61814

Paired Samples Test

		Paired Differences					Significance			
		95% Confidence Interval of the Difference								
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	Gr1Testing Window 3 Scaled Scores - Gr1 Testing Window 1 Scaled scores paired w T3 SS	92.17241	111.20543	20.65033	49.87213	134.47270	4.463	28	<.001	<.001

Model	Testing Window	Below 50th Percentile	50th-75th Percentile	75th-90th Percentile	Above 90th Percentile
GPT-4o	1	15 (9/59)	29% (17/59)	27% (16/59)	29% (17/59)
	3	8% (5/59)	15% (9/59)	20% (12/59)	56% (33/59)

When the Lexile growth for grade 2 from Diagnostic Testing window 1 to 3 was analyzed with a sample size of 37, the mean difference was 150.95, increasing from Testing window 1 to 3, which was statistically significant, appearing to indicate growth ($t(36) = 4.728, p < 0.05$) with a Cohen's d large effect size of 0.78, meaning that the growth was of large practical significance.

		Paired Differences							Significance	
					95% Confidence Interval of the Difference					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	G2LexTW3 - G2LexTW1	150.94595	194.20721	31.92747	86.19404	215.69785	4.728	36	<.001	<.001

Exact Path Scaled Score Growth

For Grade 2 performance using 44 complete pairs of Testing window 1 compared with Testing window 2, scaled scores produced a mean difference of 49.70, increasing from Diagnostic Testing window 1 to 2. which was statistically significant, appearing to indicate growth ($t(43) = 4.142$, $p < 0.05$) with a Cohen's d large effect size of 0.624, meaning it had a large practical significance.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	G2 Testing Window 2 Scaled Scores	1014.5909	44	126.54282	19.07705
	G2 Testing Window1 Scaled Scores paired w T2SS	964.8864	44	116.59315	17.57708

Paired Samples Test

		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	G2 Testing Window 2 Scaled Scores - G2 Testing Window1 Scaled Scores paired w T2SS	49.70455	79.59770	11.99981	25.50463	73.90446	4.142	43	<.001	<.001

To investigate if this growth was apparent in the third testing window, scaled scores of Grade 2 Testing window 1 were matched and compared with Testing window 3. There were 37 complete pairs of Testing window 1 compared with Testing window 3 scores. This produced a mean difference of 68.92, increasing from Diagnostic Testing window 1 to 3, which was statistically significant, appearing to indicate growth ($t(36) = 4.708$, $p < 0.05$) with a Cohen's d large effect size of 0.774, meaning it had a large practical significance.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	G2 Testing Window 3 Scaled Scores	1042.8919	37	99.22079	16.31180
	G2 Testing Window 1 Scaled Scores paired w T3SS	973.9730	37	104.81478	17.23144

Paired Samples Test

		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	G2 Testing Window 3 Scaled Scores - G2 Testing Window 1 Scaled Scores paired w T3SS	68.91892	89.03444	14.63717	39.23336	98.60448	4.708	36	<.001	<.001

Conclusion:

Significant Academic Gains Observed

The analysis of student performance on Exact Path revealed statistically significant growth in scaled scores between testing windows 1 and 2, and again between testing windows 1 and 3 across Kindergarten, Grade 1, and Grade 2. These findings indicate substantial academic progress, demonstrating a large effect size, underscoring the considerable practical significance of this growth.

Delving into Lexile scores, Kindergarten performance exhibited a modest 1% increase in the percentage of students scoring above the 90th percentile between testing windows 1 and 3. While this growth suggests positive development, the mean difference of 74.14 points to a moderate level of practical significance. In contrast, Grade 1 witnessed a notable 7% surge in the percentage of students exceeding the 90th percentile in Lexile scores between the same testing windows. This growth, with a mean difference of 174.70, signifies a large practical significance. Grade 2 demonstrated the most substantial improvement with a remarkable 27% increase in students above the 90th percentile in Lexile scores between testing windows 1 and 3. This advancement, characterized by a mean difference of 150.95, also indicates a large practical significance.



A ACCELERATE EDUCATION

In summary, the data robustly demonstrates that for Exact Path scaled scores, growth of large practical significance was observed from testing window 1 to 2 in Kindergarten, Grade 1, and Grade 2. This pattern of substantial improvement was further confirmed by the analysis of growth from testing windows 1 to 3 across the same grade levels. Furthermore, the Lexile score analysis revealed growth of large practical significance for Kindergarten, Grade 1, and Grade 2.

Collectively, this data compellingly illustrates significant student growth across multiple grade levels. The consistently large practical significance observed in both Exact Path scaled score improvements and Lexile advancements across all grades is likely attributed to the efficacy of Accelerate Education's curriculum in fostering enhanced student achievement. The observed success can be attributed to a combination of factors essential for student academic growth: the program's high-quality curriculum, exemplified by its structured learning approach and individualized learning plans; effective teaching practices facilitated by frequent assessments; and the comprehensive instructional supports provided by the school, such as dedicated learning coaches. Together, these elements constitute a highly effective educational model conducive to long-term academic success, ensuring that credit for student literacy growth reflects the synergy between curriculum, teaching, and school-based support systems.