

RESEARCH RESULTS

Read 180: Southwest Local School District

STUDY PROFILE

DISTRICT:

Southwest Local School District, Harrison, Ohio

GRADES:

6–8

STUDY DESIGN:

Level 1: Promising (ESSA)¹

EVALUATION PERIOD:

School years 2019–2020 through 2021–2022

STUDY CONDUCTED BY:

Forge Research Group

OUTCOME MEASURES:

- HMH *Reading Inventory*
- NWEA Measures of Academic Progress (MAP)
- Ohio State Test English Language Arts

IMPLEMENTATION:

50-Minute Daily Single Period Model

DISTRICT CHARACTERISTICS

The Southwest Local School District (SLSD), located in Hamilton County, is the 67th largest of 612 school districts in Ohio. The SLSD serves approximately 4,500 K–12th grade students. Harrison Middle School, the only Grade 6 through 8 school available to middle schoolers in the district, serves approximately 1,080 students. During the 2019–2020 through 2021–2022 school years, Harrison Middle School served students with a range of ethnic backgrounds: African American (1.0%–1.6%), Asian (<1%), Caucasian (89.4%–92.4%), Hispanic (3.0%–4.2%), Native American or Alaska Native (<1%), Native Hawaiian/Pacific Islander (<1%), and students with multiple ethnic backgrounds (2.9%–3.9%). In the 2019–2020 through 2021–2022 school years, 27.7%–38.2% of students in the district were socioeconomically disadvantaged, <1% were English Learners (EL), and 13.0%–14.2% were classified as Students with Disabilities (SWD).

IMPLEMENTATION OVERVIEW

IMPLEMENTATION MODEL

Harrison Middle School students in Grades 6 to 8 were identified as struggling with reading comprehension if they met at least two of these criteria: English Language Arts (ELA) teacher recommendation, scores below grade-level proficiency on the Measures of Academic Progress Reading test, Limited or Basic score on the Ohio State ELA Test. These students were placed in the *Read 180*[®] class and remained enrolled in *Read 180* until achieving a proficient performance level on the *Reading Inventory* as well as significant growth in Measures of Academic Progress Reading scores.

Students in Grades 6, 7, and 8 received regular ELA instruction daily as well as 50-minute *Read 180* instruction daily. In this Single Period Instruction Model, students alternated A and B patterns of instruction, with A days consisting of 20 minutes of whole-group instruction followed by 20 minutes of a station rotation (rotated between the *Read 180* online student application, small group learning, and independent reading), and concluding with 5 minutes of whole-group wrap-up, and B days consisting of 20 minutes each of 2 station rotations and concluding with 5 minutes of whole-group wrap-up. Using this pattern, students completed each station every other school day, or approximately 2.5 times a week.

PARTICIPANTS

One middle school teacher in the SLSD utilized *Read 180* for reading intervention classes during the 2019–2020 through 2021–2022 school years. Of note, student exposure to and use of *Read 180* was interrupted during the 2019–2020 and 2020–2021 school years due to the Covid-19 pandemic. In the 2019–2020 school year, 100% of students were enrolled in *Read 180* for only one semester and in the 2020–2021 school year, 66% (49/74) of students were enrolled in *Read 180* for only one semester. All students with school data who completed at least 100 minutes of *Read 180* software usage ($N=230$) were included in the analysis.

Student demographics varied slightly by year (see Table 1); ethnic backgrounds included Asian (0–2%), African American (2–3%), Caucasian (73–83%), Hispanic (2–12%), and students with multiple ethnic backgrounds (0–4%). Of these students, 39–50% were male and 35–52% were female, 35–50% were eligible for Free or Reduced Price Lunch (FRPL; classified as socioeconomically disadvantaged), 0%–

¹Correlational study with statistical control for selection bias.

2% were classified as English Learners (EL), and 2%–9% were classified as Students with Disabilities (SWD) each year.

TABLE 1. SLSD READ 180 STUDENTS GRADES 6–8 (N=230) DEMOGRAPHICS 2019–2022			
Characteristics	2019–2020 N=59	2020–2021 N=75	2021–2022 N=107
Grade			
6	43.3%	40.0%	38.3%
7	35.0%	26.7%	21.5%
8	20.0%	33.3%	32.7%
Not Reported	1.7%	0.0%	7.5%
Gender			
Male	50.0%	38.7%	49.5%
Female	35.0%	52.0%	43.0%
Not Reported	15.0%	9.3%	7.5%
Ethnicity			
African American	0.0%	2.7%	1.9%
Asian	0.0%	0.0%	1.9%
Hispanic	11.7%	5.3%	1.9%
Caucasian	73.3%	81.3%	83.2%
Multiple Ethnicities	0%	1.3%	3.7%
Not Reported	15.0%	9.3%	7.5%
Socioeconomically Disadvantaged	35.3%	44.1%	49.5%
Students with Disabilities	3.9%	8.8%	2.0%
English Learners	0.0%	0.0%	2.0%

MEASURES

Software Usage Data

Student software usage data was collected as students used the online student application during *Read 180* instruction. Software usage data included number of completed segments, number of completed sessions, average time spent in each session, and number of sessions averaged per week.

Measures of Academic Progress (MAP) Reading

Measures of Academic Progress (MAP®) is a computer-adaptive interim (Fall, Winter, and Spring) assessment developed by the Northwest Evaluation Association that measures reading, language usage, and mathematics. The primary score produced is the RIT (Rasch Unit) scale, which is a stable equal-interval vertical scale. This grade-independent RIT score indicates the level of question difficulty a given student can answer correctly about 50% of the time. National percentile ranks for the MAP are also provided. SLSD students completed the MAP Reading assessment at least twice each year (fall and winter, fall and spring, or winter and spring).

Reading Inventory

The HMH *Reading Inventory*® measures reading comprehension proficiency for students in Grades K–12. The *Reading Inventory* uses adaptive technology to determine a student's reading comprehension level on the Lexile Framework for Reading; the higher the Lexile® score, the more challenging reading material the student can comprehend. Assessment results include a Lexile scale score that indicates reading ability at a level of text complexity and a performance level of Below Basic, Basic, Proficient, or Advanced, indicating achieved reading comprehension compared to grade-level expectations. SLSD students receiving *Read 180* instruction completed the *Reading Inventory* at least twice each year (fall and winter, fall and spring, or winter and spring).

Ohio State Test English Language Arts (OST ELA) Summative Assessment

The Ohio State Test English Language Arts (OST ELA) Summative Assessment was designed to measure student progress in achieving end-of-year ELA standards as described in *Ohio's Learning Standards in English Language Arts*. Middle school students complete 2 days of testing that include Reading and Extended Writing Response sections. Assessment results include a scale score that corresponds to Performance Level Descriptors based on grade-level cutoff scores (PLD; Limited, Basic, Proficient, Accelerated, and Advanced). Students complete the Ohio State Test ELA assessment in the spring of each school year; however, it was not administered in the 2019–2020 school year.

RESULTS

An independent evaluator from Forge Research Group analyzed student academic achievement using data provided by the Southwest Local School District and Houghton Mifflin Harcourt. *Read 180* students' ELA performance was examined pre- and post-*Read 180* usage using multiple independent outcome measures.

USAGE

As previously noted, full-year implementation of *Read 180* did not occur until the 2021–2022 school year due to the Covid-19 pandemic (see Table 2 for usage details). In only one semester of the 2019–2020 school year, SLSD students completed an average of 33.6 ($SD=12.3$) total *Read 180* sessions with 2.2 ($SD=0.3$) sessions averaged a week, averaging 12.6 minutes ($SD=2.4$) per session in the *Read 180* online student application. In the 2020–2021 school year, with the majority (66%) of SLSD students enrolled in *Read 180* for only one semester, students completed an average of 33.1 ($SD=13.5$) total *Read 180* sessions with 1.5 ($SD=0.5$) sessions averaged a week, averaging 12.6 minutes ($SD=2.6$) per session in the *Read 180* online student application. In the 2021–2022 school year, usage nearly doubled when SLSD students completed an average of 53.9 ($SD=20.9$) total *Read 180* sessions with 2.0 ($SD=0.32$) sessions averaged a week, averaging 13.7 minutes ($SD=2.7$) per session in the *Read 180* online student application.

**TABLE 2. SLSD READ 180 STUDENTS GRADES 6–8 (N=230)
READ 180 SOFTWARE USAGE 2019–2022**

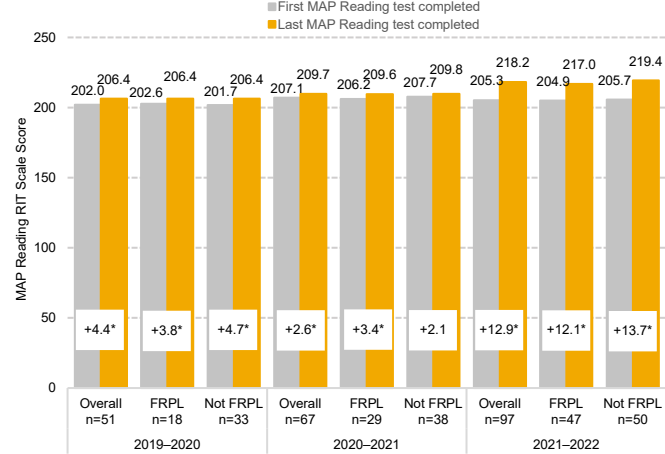
READ 180 Software Usage	2019–2020 N=60		2020–2021 N=74		2021–2022 N=107	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Segments Completed	2.3	1.5	1.9	1.7	4.7	3.3
Sessions Completed	33.6	12.3	33.1	13.5	53.9	20.9
Total Time	430.5	190.6	419.1	193.8	746.1	341.5

PERFORMANCE

Measures of Academic Progress (MAP) Reading

Read 180 students completed the MAP Reading test in the fall and winter of the 2019–2020 school year and in the fall, winter, and spring of the 2020–2021 and 2021–2022 school years. Overall, students who completed the MAP Reading test at two timeframes within the school year (fall and winter, fall and spring, or winter and spring) demonstrated a statistically significant overall increase in RIT scale scores, averaging a 4-point (2018–2019), 3-point (2020–2021), and 13-point (2021–2022) gain from first testing to last testing within the school year (see Graph 1). After full-year *Read 180* implementation in the 2021–2022 school year, disaggregation of the data indicated that students in Grades 6, 7, and 8, and both males and females, achieved statistically significant MAP Reading RIT scale score gains (see Appendix Table 1). Likewise, both students classified as socioeconomically disadvantaged (FRPL-eligible) and those not classified as socioeconomically disadvantaged achieved statistically significant MAP Reading RIT scale score gains from pre- to post-*Read 180* instruction.

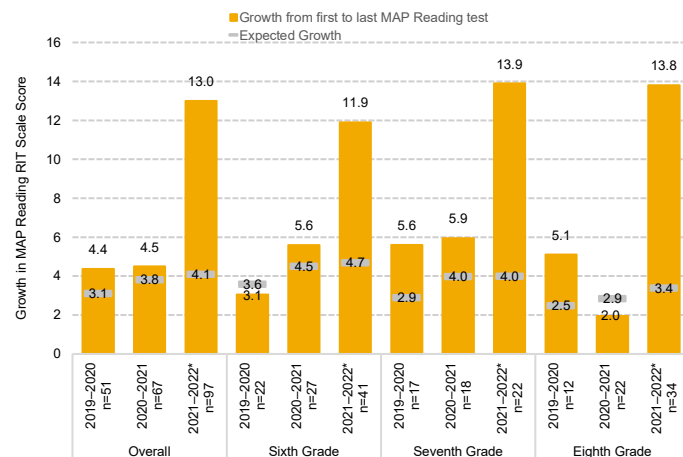
GRAPH 1
SLSD READ 180 STUDENTS GRADES 6–8 (N=204)
CHANGE IN MAP READING RIT SCALE SCORE OVERALL AND BY
STUDENT CATEGORY AND YEAR, FALL 2019 TO SPRING 2022



Graph Note: *statistically significant change at one-sided $p < .05$. FRPL=Free or Reduced-Price Lunch eligible (socioeconomically disadvantaged).

SLSD *Read 180* students met or exceeded national MAP Reading growth averages² in each of the three school years included in this study (see Graph 2). Of note, students achieved an average of 3.2 times more growth than the national average in the 2021–2022 school year, correlating with the more extensive use of *Read 180* as compared to previous years. These gains were statistically significantly greater than average student growth. *Read 180* students also showed accelerated growth in MAP Reading percentile scores compared to their initially same-scoring peers. On average, students scored better than 32% of their peers at the first MAP Reading test but better than 37% of their peers at the last MAP Reading test in the 2021–2022 school year. These gains represent progress towards achieving a percentile score above 50, which reflects grade-level proficiency. *Read 180* students demonstrated a 29% increase (from 17 to 24) in number of students scoring at least in the 50th percentile on the MAP Reading test during the 2021–2022 school year.

GRAPH 2
SLSD READ 180 STUDENTS GRADES 6–8 (N=204)
MAP READING RIT SCALE SCORE ACTUAL COMPARED TO
EXPECTED GROWTH BY YEAR AND GRADE LEVEL, FALL 2019 TO
SPRING 2022

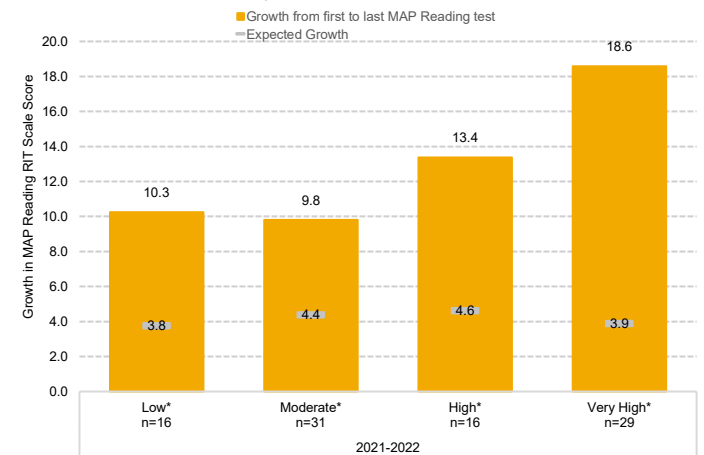


Graph Note: *statistically significant difference between expected and actual growth at $p < .05$.

Increased use of the *Read 180* online student application was a statistically significant predictor of MAP Reading RIT scale score growth, both before and after correcting for selection bias (see Appendix Table 3 for details). On average, *Read 180* students who completed more segments of the *Read 180* online software also achieved higher gains in the MAP Reading RIT scale score from first to last assessment (see

Graph 3). Students who completed 7 or more segments of the online software achieved an average of 1.8 times more MAP Reading RIT scale score gain (18.6) compared to students who completed 1 to 2 segments (10.3).

GRAPH 3
SLSD READ 180 STUDENTS GRADES 6–8 (N=97)
AVERAGE MAP READING RIT SCALE SCORE GAIN BY
IMPLEMENTATION LEVEL, FALL 2021 TO SPRING 2022



Graph Note: *statistically significant difference between expected and actual growth at one-sided $p < .05$. Score gains increased between low (1–2 segments), moderate (3–4 segments), high (5–6 segments), and very high (7 or more segments) levels of implementation. Number of *Read 180* segments completed was a significant predictor of MAP Reading RIT scale score gain ($t=4.17$, $p < .001$). Groups with less than $n=10$ are suppressed to maintain confidentiality.

Reading Inventory

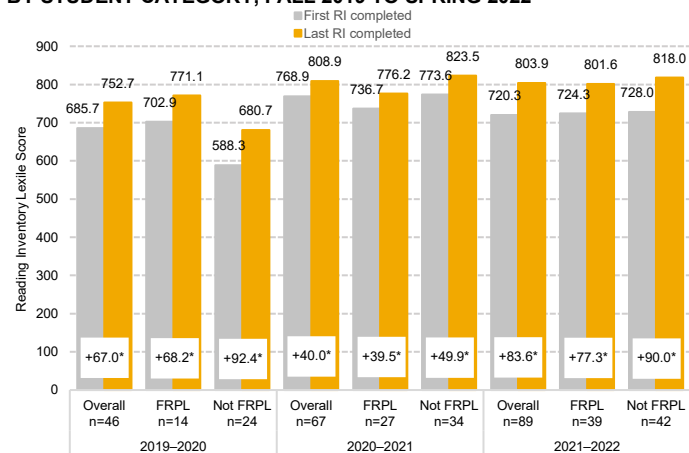
Read 180 students completed the *Reading Inventory* in the fall and winter of the 2019–2020 school year and in the fall, winter, and spring of the 2020–2021 and 2021–2022 school years. Overall, students³ who completed the *Reading Inventory* at two timeframes within the school year (fall and winter, fall and spring, or winter and spring) demonstrated a statistically significant overall gain in Lexile (L) Scores, averaging a 67L (2019–2020), 40L (2020–2021), and 84L (2021–2022) increase from first to last testing in the school year (see Graph 4). After full-year *Read 180* implementation in the 2021–2022 school year, disaggregation of the data indicated that students in Grades 6, 7, and 8, and both males and females, achieved statistically significant *Reading Inventory* Lexile gains (see Appendix Table 2). Likewise, both students classified as socioeconomically disadvantaged (FRPL-eligible) and those not classified as socioeconomically disadvantaged achieved statistically significant *Reading Inventory* Lexile gains from pre- to post-*Read 180* instruction.

²As compared to 2020 NWEA MAP Growth Normative Data

³As a previous *Read 180* Universal gains analysis has shown that students who decrease more than 100L on the *Reading Inventory* from fall to spring demonstrate poor test motivation and produce unreliable longitudinal achievement scores, those scores that decreased more than 100L were excluded from this implementation analysis. The *Reading Inventory* scores of some SLSD students decreased more than 100L in 2019–2020 (4%/n=2), 2020–2021 (7%/n=5), and 2021–2022 (12%/n=12).

GRAPH 4

SLSD READ 180 STUDENTS GRADES 6–8 (N=196)
CHANGE IN READING INVENTORY IN LEXILE SCORES OVERALL AND BY STUDENT CATEGORY, FALL 2019 TO SPRING 2022

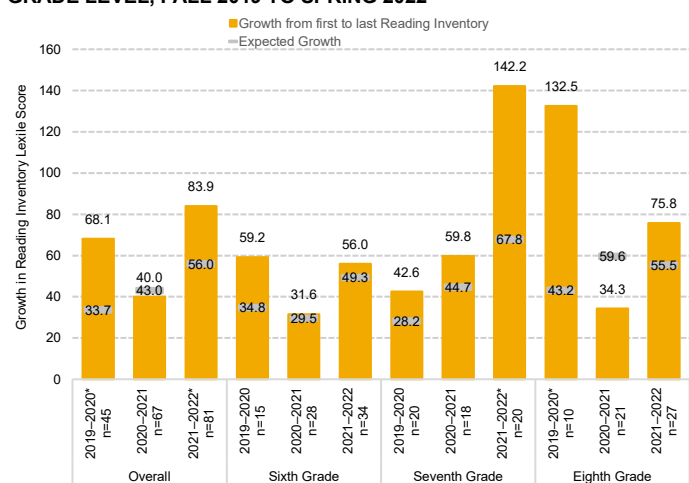


Graph Note: *statistically significant change at one-sided $p < .05$.

Overall, *Read 180* students achieved equivalent or greater than average *Reading Inventory* growth in each of the three school years included in this study (see Graph 5). Of note, these gains were statistically significantly greater than average student growth in the 2019–2020 and 2021–2022 school years. After full-year *Read 180* implementation in the 2021–2022 school year, SLSD students demonstrated on average 1.5 times more growth than the national average and 37% of students demonstrated at least 2 times more growth than expected.

GRAPH 5

SLSD READ 180 STUDENTS GRADES 6–8 (N=196)
READING INVENTORY LEXILE SCORE GROWTH BY YEAR AND GRADE LEVEL, FALL 2019 TO SPRING 2022

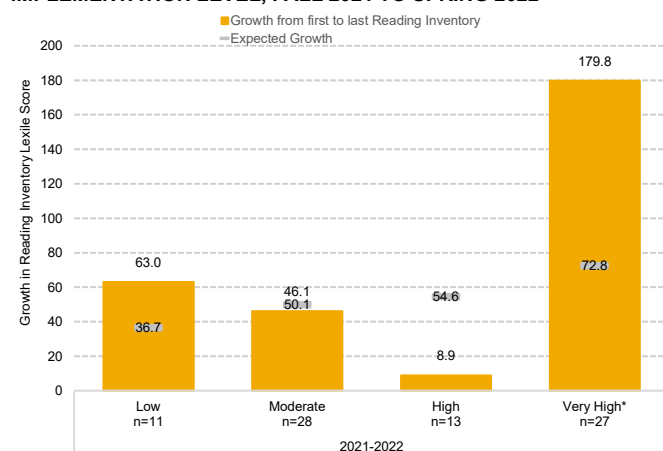


Graph Note: *statistically significant difference between expected and actual growth at $p < .05$.

Further, increased use of the *Read 180* online student application was a statistically significant predictor of *Reading Inventory* Lexile score growth in the 2021–2022 school year, both before and after correcting for selection bias (see Appendix Table 4 for details). On average, *Read 180* students who completed more segments of the *Read 180* online software also achieved higher gains in the *Reading Inventory* Lexile score from first to last assessment (see Graph 6). Students who completed 7 or more segments of the online software achieved an average of 3 times more Lexile score gain (180L) compared to students who completed 1 to 2 segments (63L).

GRAPH 6

SLSD READ 180 STUDENTS GRADES 6–8 (N=81)
AVERAGE READING INVENTORY GAIN IN LEXILE SCORES BY IMPLEMENTATION LEVEL, FALL 2021 TO SPRING 2022



Graph Note: *statistically significant difference between expected and actual growth at $p < .05$. *Reading Inventory* Lexile score gains increased between low (1–2 segments), moderate (3–4 segments), high (5–6 segments), and very high (7 or more segments) levels of implementation. Number of *Read 180* segments completed was a significant predictor of *Reading Inventory* Lexile score gain ($t = 3.81, p < .001$). Groups with less than $n = 10$ are suppressed to maintain confidentiality.

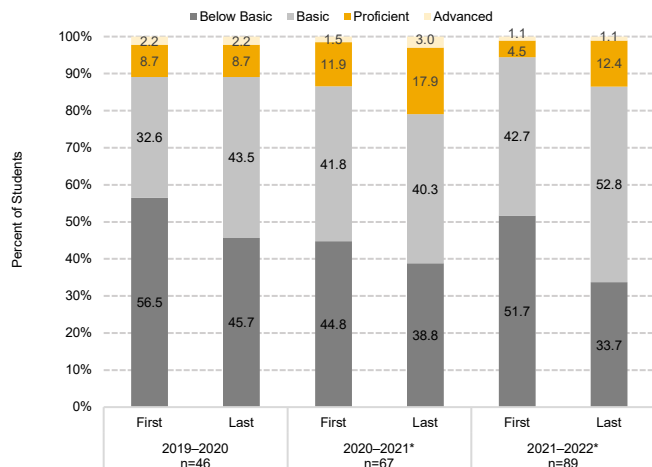
Of note, in the 2019–2020 school year, 53% of students met or exceeded average *Reading Inventory* growth, with 24% of students increasing one, 9% of students increasing two, and 4% of students increasing three or more grade levels in reading proficiency (see Table 3). In the 2020–2021 school year, 39% of students met or exceeded average *Reading Inventory* growth, with 21% of students increasing one, 5% of students increasing two, and 9% of students increasing three or more grade levels in reading proficiency. In the 2021–2022 school year, 51% of students met or exceeded average *Reading Inventory* growth, with 25% of students increasing one, 8% of students increasing two, and 17% of students increasing three or more grade levels in reading proficiency.

TABLE 3. SLSD READ 180 STUDENTS GRADES 6–8 (N=196)
INCREASE IN GRADE-LEVEL READING PROFICIENCY 2019–2022

Grade Levels Gained	2019–2020 N=46		2020–2021 N=67		2021–2022 N=89	
	%	N	%	N	%	N
1	23.9%	11	20.9%	14	24.7%	22
2	8.7%	4	4.5%	3	7.9%	7
3 or more	4.3%	2	9%	6	16.8%	15

Read 180 student *Reading Inventory* performance levels also reflected these increases in reading proficiency (see Graph 7). The percent of students achieving at least a proficient *Reading Inventory* performance level increased from first to last testing by 62% (from 13% to 21%) in the 2020–2021 school year and by 133% (from 6% to 14%) in the 2021–2022 school year. Further, the percent of students scoring at a Below Basic performance level decreased from first to last testing by 11% (from 57% to 46%) in the 2019–2020 school year, by 6% (from 45% to 39%) in the 2020–2021 school year, and by 18% (from 52% to 34%) in the 2021–2022 school year. The increase in students' performance levels on the *Reading Inventory* was statistically significant in the 2020–2021 and 2021–2022 school years.

GRAPH 7
SLSD READ 180 STUDENTS GRADES 6–8 (N=196)
CHANGE IN READING INVENTORY PERFORMANCE LEVELS, FALL 2019 TO SPRING 2021

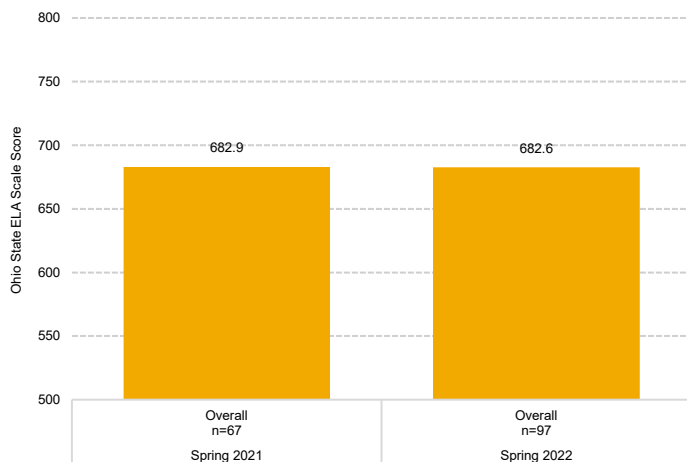


Graph Note. *statistically significant change at one-sided $p < .05$.

Ohio State Test English Language Arts (OST ELA) Summative Assessment

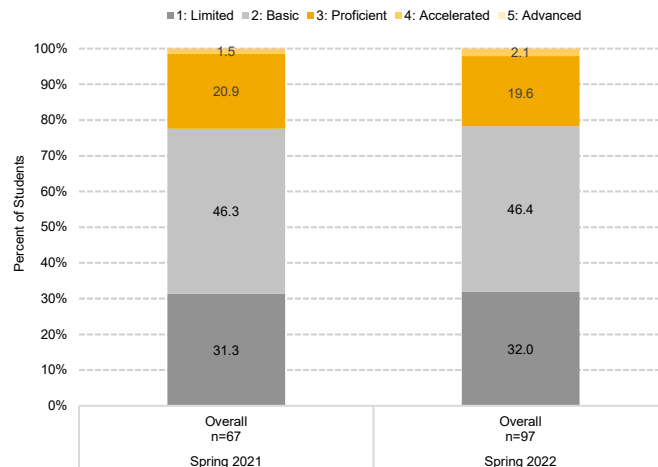
SLSD *Read 180* students completed the OST ELA summative assessment, measuring end-of-year ELA skills, in the spring of the 2020–2021 and 2021–2022 school years. As only four students completed the OST ELA assessment in both years, a year-to-year growth comparison cannot be made. Overall, students who completed the OST ELA in the 2020–2021 school year averaged a 683 scale score, and likewise, students who completed the OST ELA in the 2021–2022 school year averaged a 683 scale score (see Graph 8).

GRAPH 8
SLSD READ 180 STUDENTS GRADES 6–8 (N=161)
OHIO STATE TEST ELA SCALE SCORE OVERALL, SPRING 2021 AND SPRING 2022



Read 180 student OST ELA Performance Level Descriptors also remained stable from spring 2021 to spring 2022 (see Graph 9). The percent of students achieving a Proficient or higher PLD was 22% each year.

GRAPH 9
SLSD READ 180 STUDENTS GRADES 6–8 (N=161)
OHIO STATE TEST ELA PERFORMANCE LEVEL DESCRIPTOR OVERALL, SPRING 2021 AND SPRING 2022



SLSD *Read 180* students' OST ELA scores were statistically significantly correlated with both MAP Reading RIT scale scores and *Reading Inventory* Lexile scores each year (see Table 4). Though year-to-year growth comparisons cannot be made with the current data, these strong correlations support the idea that students who make gains on the MAP Reading test and *Reading Inventory* will also make gains on the OST ELA assessment.

TABLE 4. SLSD READ 180 STUDENTS GRADES 6–8 (N=230)
OUTCOME MEASURE CORRELATIONS 2021–2022

	MAP Reading RIT Scale Score		Reading Inventory Lexile Score	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Ohio State Test ELA 2021	0.67	<.001	0.58	<.001
Ohio State Test ELA 2022	0.31	.002	0.34	<.001

CONCLUSION

Multiple independent ELA outcome measures support the idea that SLSD students who received *Read 180* instruction made significant improvements in English Language Arts achievement.

The SLSD targeted students who were not reading with grade-level proficiency to participate in *Read 180* instruction during the 2019–2020 through 2021–2022 school years, although full-year implementation was not achieved until the 2020–2021 school year due to the Covid-19 pandemic. In a correlational analysis across a three-year time span, SLSD students in Grades 6–8 who received *Read 180* instruction demonstrated yearly statistically significant increases in Measures of Academic Progress (MAP) Reading RIT scale scores and HMH *Reading Inventory* Lexile scores.

Of note, once *Read 180* was implemented during both semesters of the 2021–2022 school year, statistically significant gains were achieved on both ELA outcome measures by students in each demographic category of grade level, gender, and students classified or not classified as socioeconomically disadvantaged. Further, *Read 180* students demonstrated statistically significantly greater than national average growth on the MAP Reading assessment, achieving 3.2 times more growth than average. Likewise, *Read 180* students demonstrated statistically significantly greater than national average growth on the HMH *Reading Inventory*, achieving 1.5 times more growth than average. Importantly, 25% of *Read 180* students increased at least two grade

levels in reading comprehension after one year of instruction, with 25% achieving a grade-level proficient MAP Reading percentile score and 14% achieving a proficient or higher *Reading Inventory* performance level, indicating an ability to access grade-level curriculum.

The total number of completed *Read 180* student application segments varied by student. In the 2021–2022 school year, an increased number of completed segments was a significant predictor of both MAP Reading RIT scale score and *Reading Inventory* Lexile score growth. This study demonstrates that *Read 180* is an effective program for accelerating ELA gains among students struggling to achieve grade-level ELA proficiency.

APPENDIX

TABLE 1.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=204)
RESULTS OF T-TEST AND DESCRIPTIVE STATISTICS MAP READING, 2019–2022

	First MAP Reading Score		Last MAP Reading Score		n	95% CI for Mean Difference	t	df	p
	M	SD	M	SD					
2019–2020									
Overall	202.00	8.53	206.37	8.54	51	-7.37, -1.38	-2.93	50	.003
Grade									
Sixth	202.32	7.56	205.36	6.76	22	-6.27, 0.18	-1.96	21	.032
Seventh	201.65	7.93	207.24	8.07	17	-11.5, 0.33	-2.00	16	.031
Eighth	201.92	11.40	207.00	12.10	12	-14.42, 4.25	-1.20	11	.128
Gender									
Female	203.24	7.18	204.71	6.69	21	-4.72, 1.76	-0.95	20	.177
Male	201.13	9.39	207.53	9.57	30	-10.98, -1.82	-2.86	29	.004
Socioeconomically Disadvantaged									
Not FRPL Eligible	201.70	9.41	206.36	9.41	33	-9.04, -0.29	-2.17	32	.019
FRPL Eligible	202.56	6.85	206.39	6.92	18	-7.22, -0.44	-2.39	17	.014
Student with Disability									
No	202.53	8.15	206.88	8.02	49	-7.46, -1.23	-2.81	48	.004
Yes	-	-	-	-	2	-	-	-	-
Ethnicity									
Hispanic	-	-	-	-	7	-	-	-	-
White/Caucasian	201.68	8.45	206.55	8.59	44	-8.27, -1.46	-2.88	43	.003
Level of Implementation									
Minimal	-	-	-	-	1	-	-	-	-
Low	201.27	8.83	204.19	8.85	26	-7.24, 1.39	-1.40	25	.087
Moderate	203.16	8.91	207.53	8.11	19	-9.88, 1.14	-1.67	18	.057
High	202.60	6.80	213.60	4.83	5	-19.19, -2.81	-3.73	4	.010
2020–2021									
Overall	207.07	8.63	209.70	8.24	67	-4.74, -0.51	-2.48	66	.008
Grade									
Sixth	203.59	8.17	206.26	6.30	27	-6.49, 1.15	-1.44	26	.082
Seventh	207.39	7.06	213.33	7.69	18	-9.17, -2.72	-3.89	17	<.001
Eighth	211.09	8.85	210.95	9.40	22	-3.56, 3.83	.08	21	.470
Gender									
Female	207.45	8.25	211.47	8.34	38	-6.68, -1.37	-3.07	37	.002
Male	206.59	9.23	207.38	7.64	29	-4.29, 2.71	-0.46	28	.323
Socioeconomically Disadvantaged									
Not FRPL Eligible	207.74	9.57	209.76	7.66	38	-5.19, 1.14	-1.30	37	.101
FRPL Eligible	206.21	7.29	209.62	9.09	29	-6.20, -0.63	-2.51	28	.009

TABLE 1.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=204)
RESULTS OF T-TEST AND DESCRIPTIVE STATISTICS MAP READING, 2019–2022

	First MAP Reading Score		Last MAP Reading Score		n	95% CI for Mean Difference	t	df	p
	M	SD	M	SD					
Student with Disability									
No	207.62	8.31	210.52	7.15	61	-5.13, -0.67	-2.6	60	.006
Yes	-	-	-	-	6	-	-	-	-
Ethnicity									
African American	-	-	-	-	2	-	-	-	-
Hispanic	-	-	-	-	4	-	-	-	-
White/Caucasian	207.60	8.64	209.88	8.23	60	-4.57, -.002	-2	59	.025
Multiple Ethnic Backgrounds	-	-	-	-	1	-	-	-	-
Level of Implementation									
Minimal	203.90	5.59	205.00	7.94	10	-6.85, 4.65	-0.43	9	.338
Low	207.35	9.42	209.05	8.78	37	-4.84, 1.43	-1.10	36	.139
Moderate	206.54	7.00	211.38	5.97	13	-9.05, -0.65	-2.51	12	.014
High	211.00	11.19	216.00	3.90	6	-14.71, 4.71	-1.32	5	.121
Very High	-	-	-	-	1	-	-	-	-
2021–2022									
Overall	205.31	9.14	218.21	10.26	97	-15.19, -10.60	-11.16	96	<.001
Grade									
Sixth	202.12	7.30	214.20	8.98	41	-15.18, -8.96	-7.84	40	<.001
Seventh	204.00	9.77	217.86	10.00	22	-19.54, -8.19	-5.08	21	<.001
Eighth	210.00	9.02	223.26	9.92	34	-17.59, -8.94	-6.24	33	<.001
Gender									
Female	202.70	8.24	215.82	10.06	44	-16.92, -9.31	-6.95	43	<.001
Male	207.47	9.36	220.19	10.09	53	-15.60, -9.83	-8.84	52	<.001
Socioeconomically Disadvantaged									
Not FRPL Eligible	205.70	8.66	219.38	10.33	50	-16.56, -10.80	-9.54	49	<.001
FRPL Eligible	204.89	9.71	216.96	10.15	47	-15.77, -8.36	-6.55	46	<.001
English Learner									
No	205.64	8.87	218.40	10.10	94	-15, -10.53	-11.34	93	<.001
Yes	-	-	-	-	2	-	-	-	-
Student with Disability									
No	205.54	9.00	218.61	9.95	95	-15.40, -10.75	-11.17	94	<.001
Yes	-	-	-	-	2	-	-	-	-
Ethnicity									
African American	-	-	-	-	2	-	-	-	-
Asian	-	-	-	-	2	-	-	-	-
Hispanic	-	-	-	-	2	-	-	-	-
White/Caucasian	205.92	8.86	218.57	9.75	87	-14.82, -10.49	-11.60	86	<.001
Multiple Ethnic Backgrounds	-	-	-	-	4	-	-	-	-

TABLE 1.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=204)
RESULTS OF T-TEST AND DESCRIPTIVE STATISTICS MAP READING, 2019–2022

	First MAP Reading Score		Last MAP Reading Score		<i>n</i>	95% CI for Mean Difference	<i>t</i>	df	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Level of Implementation									
Minimal	200.60	8.39	207.20	9.45	5	-25.32, 12.12	-0.98	4	.192
Low	201.44	10.18	212.06	10.95	16	-18.18, -3.07	-3.07	15	.004
Moderate	205.97	10.21	215.48	9.15	31	-13.13, -5.90	-5.37	30	<.001
High	206.13	7.90	219.50	7.53	16	-19.04, -7.71	-5.04	15	<.001
Very High	207.10	7.70	225.69	7.31	29	-22.06, -15.11	-10.97	28	<.001

Table Note. *M*=Mean; *SD*=Standard Deviation; *n*=sample size; CI=confidence interval; df=degrees of freedom; *p*=one-sided significance. Demographic categories with less than 10 students are suppressed to maintain student confidentiality.

TABLE 2.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=196)
RESULTS OF T-TEST AND DESCRIPTIVE STATISTICS *READING INVENTORY*, 2019–2022

	First Reading Inventory Lexile		Last Reading Inventory Lexile			95% CI for			
	M	SD	M	SD	n	Mean Difference	t	df	p
2019–2020									
Overall	685.72	256.28	752.67	213.55	46	-101.40, -32.51	-3.92	45	<.001
Grade									
Sixth	634.13	253.20	693.33	229.46	15	-99.16, -19.24	-3.18	14	.003
Seventh	749.50	240.27	792.05	220.79	20	-90.68, 5.58	-1.85	19	.040
Eighth	625.90	297.19	758.40	183.39	10	-257.13, -7.87	-2.41	9	.020
Gender									
Female	503.09	216.98	585.18	218.48	11	-180.83, 16.65	-1.85	10	.047
Male	682.37	230.17	766.52	181.06	27	-126.78, -41.52	-4.06	26	<.001
Socioeconomically Disadvantaged									
Not FRPL Eligible	588.25	231.88	680.71	194.78	24	-151.71, -33.21	-3.23	23	.002
FRPL Eligible	702.86	239.64	771.14	222.19	14	-107.52, 29.06	-3.76	13	.001
Student with Disability									
No	630.47	238.20	714.03	207.08	38	-122.44, -44.66	-4.35	37	<.001
Yes	-	-	-	-	8	-	-	-	-
Ethnicity									
Hispanic	-	-	-	-	6	-	-	-	-
White/Caucasian	628.25	246.49	724.53	202.85	32	-140.30, -52.26	-4.46	31	<.001
Level of Implementation									
Minimal	-	-	-	-	3	-	-	-	-
Low	686.80	329.25	750.35	258.23	20	-133.99, 6.89	-1.89	19	.037
Moderate	701.39	176.79	772.28	153.87	18	-119.22, -22.55	-3.09	17	.003
High	554.40	240.73	626.80	252.63	5	-136.18, -8.62	-3.15	4	.017
Very High	-	-	-	-	-	-	-	-	-
2020–2021									
Overall	768.88	207.2	808.88	199.38	67	-71.15, -8.85	-2.56	66	.006
Grade									
Sixth	736.93	191.48	768.50	189.76	28	-71.52, 8.38	-1.62	27	.058
Seventh	753.67	162.74	813.44	170.95	18	-143.96, 24.40	-1.50	17	.076
Eighth	824.52	254.50	858.81	229.82	21	-89.37, 20.80	-1.30	20	.104
Gender									
Female	800.06	152.09	835.81	155.06	36	-81.20, 9.70	-1.60	35	.060
Male	695.52	245.09	754.60	233.51	25	-113.30, -4.86	-2.25	24	.017
Socioeconomically Disadvantaged									
Not FRPL Eligible	773.62	191.84	823.47	208.83	34	-103.19, 3.48	-1.90	33	.033
FRPL Eligible	736.65	212.79	776.15	172.60	27	-80.73, 1.55	-1.98	26	.029
Student with Disability									
No	777.04	180.89	826.12	167.24	57	-85.05, -13.13	-2.73	56	.004

TABLE 2.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=196)
RESULTS OF T-TEST AND DESCRIPTIVE STATISTICS *READING INVENTORY*, 2019–2022

	First Reading Inventory Lexile		Last Reading Inventory Lexile			95% CI for			
	M	SD	M	SD	n	Mean Difference	t	df	p
Yes	-	-	-	-	4	-	-	-	-
Ethnicity									
African American	-	-	-	-	2	-	-	-	-
Hispanic	-	-	-	-	4	-	-	-	-
White/Caucasian	757.80	206.69	805.65	200.72	54	-86.03, -9.67	-2.51	53	.008
Multiple Ethnic Backgrounds	-	-	-	-	1	-	-	-	-
Level of Implementation									
Minimal	821.70	127.62	854.90	155.09	10	-103.66, 37.26	-1.07	9	.157
Low	753.82	225.09	795.89	206.69	38	-85.65, 1.50	-1.96	37	.029
Moderate	774.67	215.65	819.83	194.66	12	-126.21, 35.88	-1.23	11	.123
High	740.17	217.80	737.00	218.52	6	-154.65, 160.98	.052	5	.480
Very High	-	-	-	-	1	-	-	-	-
2021–2022									
Overall	720.3	203.26	803.94	189.29	89	-117.56, -49.72	- 4.90	88	<.001
Grade									
Sixth	672.59	148.85	728.59	134.67	34	-101.57, -10.43	-2.50	33	.009
Seventh	684.50	233.21	826.65	169.25	20	-230.06, -54.24	-3.38	19	.002
Eighth	824.59	160.48	900.37	153.69	27	-148.24, -3.31	-2.15	26	.021
Gender									
Female	701.43	194.70	763.19	163.85	42	-116.83, -6.69	-2.27	41	.014
Male	752.87	179.19	860.54	155.24	39	-156.96, -58.37	-4.42	38	<.001
Socioeconomically Disadvantaged									
Not FRPL Eligible	728.00	173.40	817.95	163.86	42	-140.85, -39.05	-3.57	41	<.001
FRPL Eligible	724.26	204.88	801.56	170.29	39	-132.58, -22.04	-2.83	38	.004
English Learner									
No	735.00	172.56	816.73	161.20	78	-118.69, -44.77	-4.40	77	<.001
Yes	-	-	-	-	2	-	-	-	-
Student with Disability									
No	731.62	182.82	814.77	164.57	79	-120.43, -45.87	-4.44	78	<.001
Yes	-	-	-	-	2	-	-	-	-
Ethnicity									
African American	-	-	-	-	2	-	-	-	-
Asian	-	-	-	-	2	-	-	-	-
Hispanic	-	-	-	-	2	-	-	-	-
White/Caucasian	731.19	175.46	820.58	162.53	72	-128.37, -50.41	-4.57	71	<.001
Multiple Ethnic Backgrounds	-	-	-	-	3	-	-	-	-
Level of Implementation									
Minimal	-	-	-	-	3	-	-	-	-

TABLE 2.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=196)
RESULTS OF T-TEST AND DESCRIPTIVE STATISTICS READING INVENTORY, 2019–2022

	First Reading Inventory Lexile		Last Reading Inventory Lexile			95% CI for			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>n</i>	Mean Difference	<i>t</i>	df	<i>p</i>
Low	756.36	197.80	816.29	154.50	14	-119.16, -0.70	-2.19	13	.024
Moderate	711.35	191.05	767.77	170.18	31	-103.63, -9.21	-2.44	30	.010
High	739.00	173.69	750.64	154.86	14	-69.60, 46.31	-0.43	13	.336
Very High	719.26	200.91	899.07	159.11	27	-261.17, -98.46	-4.54	26	<.001

Table Note. *M*=Mean; *SD*=Standard Deviation; *n*=sample size; CI=confidence interval; df=degrees of freedom; *p*=one-sided significance.
Demographic categories with less than 10 students are suppressed to maintain student confidentiality.

TABLE 3.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=204)
REGRESSION ANALYSIS OF RIT SCALE SCORE GAIN FROM FIRST TO LAST MAP READING TEST, 2019–2022

Variable	N	M	SD	t	Naïve Analysis		Corrected for Selection Bias	
					95% CI	p	95% CI	p
READ 180 Segments 2019–2020	51	2.51	1.45	1.28	-0.76, 3.40	.208	-0.89, 3.36	.226
READ 180 Segments 2020–2021	67	1.97	1.70	0.36	-0.85, 1.23	.717	-0.79, 1.17	.706
READ 180 Segments 2021–2022	96	4.93	3.30	4.17	0.70, 1.99	<0.001	0.67, 2.14	<.001

Table Note. N=sample size; M=Mean; SD=Standard Deviation; CI=confidence interval; p=significance.

TABLE 4.
SOUTHWEST LOCAL SCHOOL DISTRICT READ 180 STUDENTS, GRADES 6–8, (N=196)
REGRESSION ANALYSIS OF LEXILE SCORE GAIN FROM FIRST TO LAST READING INVENTORY, 2019–2022

Variable	N	M	SD	t	Naïve Analysis		Corrected for Selection Bias	
					95% CI	p	95% CI	p
READ 180 Segments 2019–2020	46	2.59	1.51	0.65	-15.66, 30.67	.517	-14.29, 25.70	.430
READ 180 Segments 2020–2021	67	1.94	1.70	0.28	-15.99, 21.29	.777	-16.82, 22.08	.789
READ 180 Segments 2021–2022	89	4.94	3.37	3.81	8.62, 27.46	<.001	7.20, 26.51	<.001

Table Note. N=sample size; M=Mean; SD=Standard Deviation; CI=confidence interval; p=significance.

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