

The Effect of Reading Plus on Student Achievement as Measured by the Smarter Balanced (SBAC) Assessment

School District

A large suburban school district in Southern California

Grade Levels

4-8

Study Inclusion Requirements

Reading Plus group

1. Completed 80+ Reading Plus lessons during the 2016-17 school year
2. Completed the SBAC assessment in Spring 2016 and Spring 2017
3. Equivalent student exists in the comparison group

Comparison group

1. Minimal or no Reading Plus use (0-19 lessons) during both the 2015-16 and 2016-17 school years
2. Equivalent student exists in Reading Plus group based on the following criteria:
 - a. Comparable baseline ELA achievement on the Spring 2016 SBAC (+/- 15 scaled score points) and completed Spring 2017 SBAC
 - b. Comparable Demographics
 - Same school, grade level, gender, Limited English Proficiency (LEP) status, and special education (IDEA) status
 - Same classification on at least three other demographic variables (race/ethnicity, language, economically disadvantaged status, 504 Plan, and parent education level)

Purpose of Report

This report focuses on the impact of Reading Plus on student achievement as measured by the Smarter Balanced Assessment Consortium (SBAC) English Language Arts (ELA) assessment. This is a replication and extension of a previous study ([link](#)).

Summary of Findings

Students who completed at least 80% of the recommended number of Reading Plus assignments (100 lessons / ≈30 hours) achieved significantly larger gains on the SBAC ELA assessment in comparison to a group of demographically similar students who had minimal or no Reading Plus use ($p = 0.02, d = 0.39$). The results were consistent across elementary and middle school grades, English proficiency groups, and different SBAC ELA achievement levels ($p = .17 - .01, d = 0.35 - 0.56$). In addition, the average gains made by students who used Reading Plus with fidelity were often large enough for students to progress to a higher achievement level ($p < 0.001, d = 0.61$).

Results

The Reading Plus group achieved an average scaled score gain of 43 points on the Spring 2017 SBAC ELA assessment (Figure 1). This gain was nearly four times larger (32 points higher) than the gain achieved by the matched comparison group. An SBAC ELA scaled score gain of approximately 40 points typically results in a student progressing to a higher achievement level or maintaining their current level ([SBAC scaled score ranges](#)).

SBAC ELA Scaled Score Gains from Spring 2016 to Spring 2017

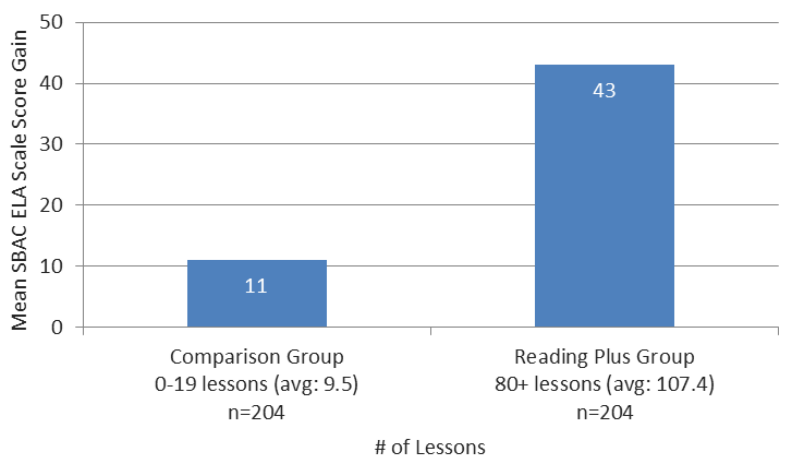


Figure 1: SBAC ELA scaled score gains from spring 2016 to spring 2017 are shown for students who completed at least 80 Reading Plus lessons versus a matched comparison group of students who used Reading Plus minimally (0-19 lessons). There is a statistically significant difference between the groups ($F(1,406) = 5.28, p = .02, d = 0.39$). Students who used Reading Plus with fidelity also achieved significant SBAC ELA scaled score gains between spring 2016 and spring 2017 ($p < .001, d = 0.61$).

Figure 2 demonstrates that, in contrast to a matched comparison group, students who engaged in Reading Plus practice achieved significantly larger gains on the SBAC ELA regardless of whether students started in the lowest achievement level (Figure 2a) or already met the standard in spring 2016 (Figure 2c).

SBAC ELA Scaled Score Gains by Spring 2016 Achievement Level

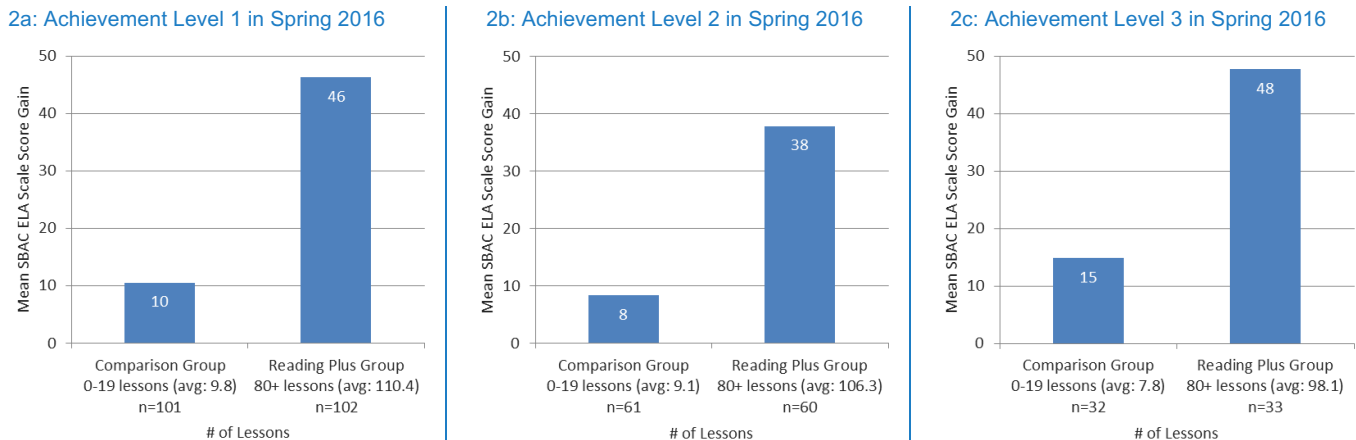


Figure 2. SBAC ELA scaled score gains achieved between spring 2016 and spring 2017 by students who started on SBAC ELA achievement levels 1 to 3. Each chart compares the gains achieved by students who completed at least 80 Reading Plus lessons to a matched comparison group of students who used Reading Plus minimally (0-19 lessons): 2a ($F(1,201) = 7.62, p = .006, d = 0.55$); 2b ($F(1,119) = 1.93, p = .17, d = 0.40$); 2c ($F(1,63) = 2.17, p = .15, d = 0.56$). Students who used Reading Plus with fidelity also achieved significant SBAC ELA scaled score gains between spring 2016 and spring 2017 in each achievement level group (2a. $p < .001, d = 0.89$; 2b. $p < .001, d = 0.68$; 2c. $p < .001, d = 1.08$).

Figure 3 shows that between spring 2016 and spring 2017, Reading Plus students were more likely to maintain or improve their SBAC ELA achievement levels than were students in the matched comparison group. Figure 3a shows that Reading Plus students were more likely to advance from Level 1 or 2 to a higher level. Students in the Reading Plus group who did not advance were still more likely to maintain their SBAC ELA achievement level as grade-level expectations for meeting the standard increased (Figure 3b). As well, students in the Reading Plus group who met the standard in spring 2016 were significantly less likely to drop to below the standard (Figure 3c).

Percentage of Students Changing SBAC ELA Achievement Levels Between Spring 2016 and Spring 2017

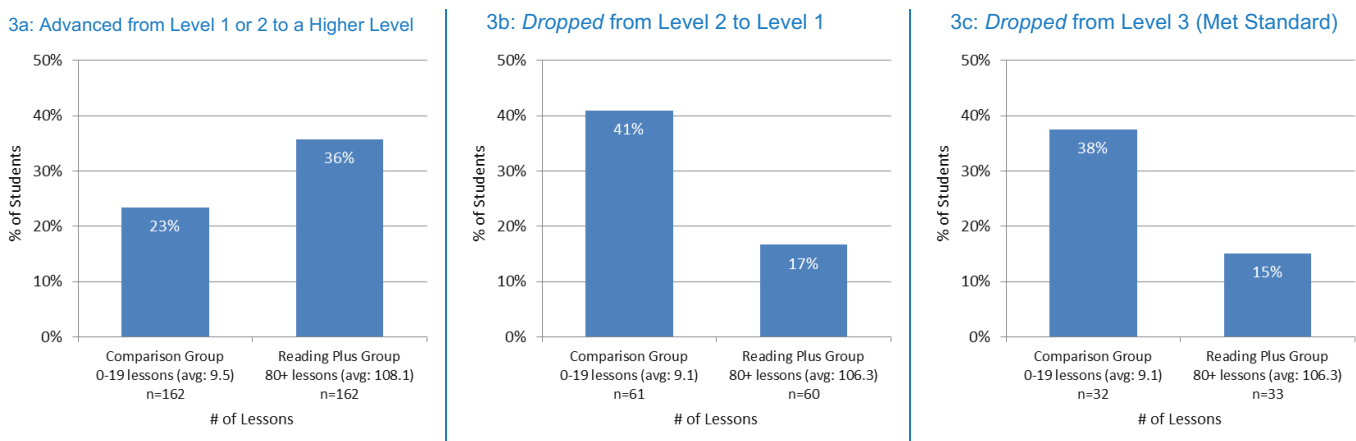


Figure 3. Statistically significant differences in the proportions of students changing achievement levels were seen between students who completed at least 80 Reading Plus lessons and a matched comparison group of students who used Reading Plus minimally (0-19 lessons): 3a ($\chi^2(2, N=324) = 11.71, p = .01$), 3b ($\chi^2(3, N=121) = 10.17, p = .02$), 3c ($\chi^2(3, N=136) = 9.75, p = .02$).

Figure 4 shows that both elementary and middle school students who completed at least 80 Reading Plus lessons demonstrated higher average SBAC ELA scaled score gains than did students in the matched comparison group. SBAC ELA scaled score gains among elementary students who used Reading Plus were nearly three times larger (41 points higher), while those of middle school students were five times larger (29 points higher).

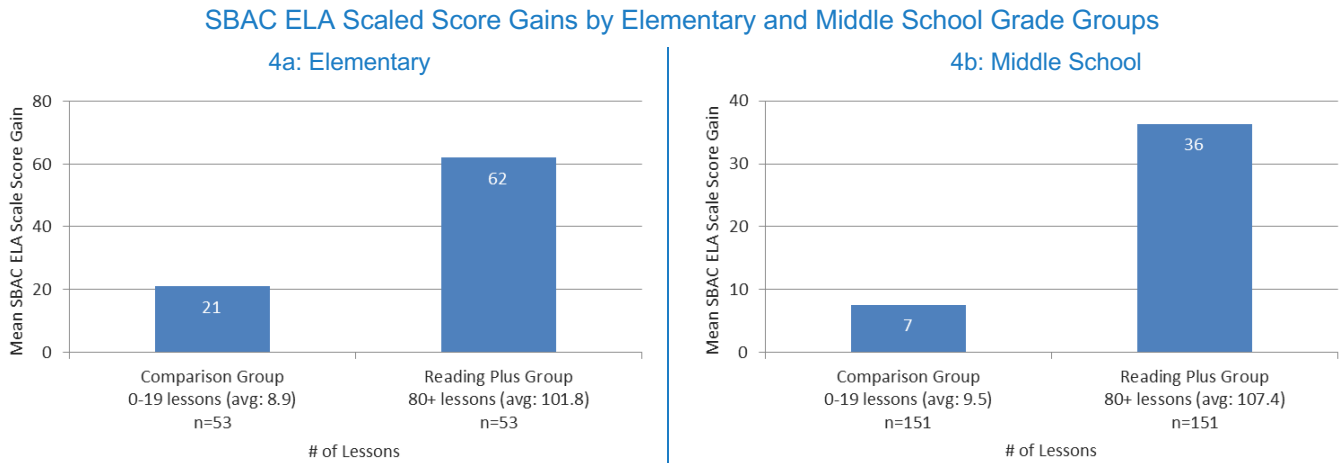


Figure 4. SBAC ELA scaled score gains by elementary (grades 4-5 during school year 2016-17) and middle school (grades 6-8 during school year 2016-17) groupings. Both charts compare the gains of students who completed at least 80 Reading Plus lessons and a matched comparison group of students who used Reading Plus minimally (0-19 lessons): 4a ($F(1,104) = 2.08, p = .15, d = 0.50$); 4b ($F(1,300) = 3.32, p = .07, d = 0.35$). Students who used Reading Plus with fidelity also achieved significant SBAC ELA scaled score gains between spring 2016 and spring 2017 in each achievement level group (4a. $p < .001, d = 0.87$; 4b. $p < .001, d = 0.52$).

English Learners (EL) are another important sub-group of students to consider. In this study, 34% of the students were classified as having Limited English Proficiency (LEP) during the 2016-17 school year. Figure 5 shows that students who were classified as LEP and completed at least 80 Reading Plus lessons achieved gains that were significantly larger than those achieved by the matched comparison group of LEP students (37 versus 5 points). As well, the SBAC ELA gains of LEP students were comparable to the gains achieved by non-LEP students who also completed at least 80 Reading Plus lessons (37 versus 46 points).

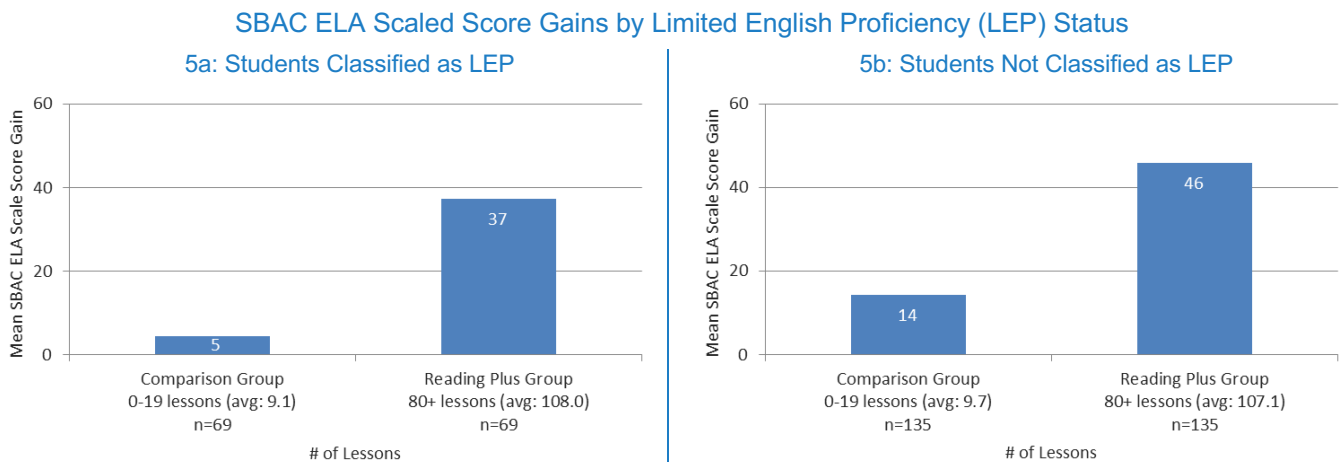


Figure 5. Shown here are SBAC ELA scaled score gains for Limited English Proficiency (LEP) and non-LEP students. There were statistically significant differences between the gains of students who completed at least 80 Reading Plus lessons and those of a matched comparison group of students who used Reading Plus minimally (0-19 lessons): 5a ($F(1,136) = 3.19, p = .08, d = 0.49$); 5b ($F(1,268) = 3.58, p = .06, d = 0.38$). Students who used Reading Plus with fidelity also achieved significant SBAC ELA scaled score gains between spring 2016 and spring 2017 in each achievement level group (5a. $p < .001, d = 0.68$; 5b. $p < .001, d = 0.65$).

Appendix 1: Study Design

A quasi-experimental ex post facto methodology was used for this study. This approach estimates the effect of Reading Plus by accounting for important student characteristics that may impact the results. The procedure creates “treatment” and “comparison” groups ex post facto (after the fact) to approximate the random assignment of students that would occur in an experimental design study. In this study, it was possible to match 204 students who completed at least 80 Reading Plus lessons during the 2016-17 school year with other students in the district who had minimal or no Reading Plus use but had nearly identical demographic characteristics and Spring 2016 SBAC ELA scores. The Study Inclusion Requirements (see side panel on page 1) provide additional details about the matching criteria. Table 1 demonstrates that the Reading Plus group and the comparison group were statistically similar and had “baseline equivalence” prior to Reading Plus students completing an average of 107 lessons between the 2016 and 2017 SBAC administrations.

Baseline Equivalence between the Reading Plus and Comparison Groups

Category	Comparison Group n=204 (avg: 9 lessons)	Reading Plus Group n=204 (avg: 107 lessons)
Mean SBAC scaled score (Spring 2016)	2446	2446
Grade Level - Spring 2017 (4 - 5 - 6 - 7 - 8)	15% - 11% - 32% - 7% - 35%	15% - 11% - 32% - 7% - 35%
Number of Matched Students from Each Study School:		
School 1	6	6
School 2	6	6
School 3	2	2
School 4	1	1
School 5	56	56
School 6	16	16
School 7	1	1
School 8	7	7
School 9	6	6
School 10	33	33
School 11	29	29
School 12	16	16
School 13	11	11
School 14	6	6
School 15	2	2
School 16	6	6
Gender (F - M)	45% - 55%	45% - 55%
Limited English Proficiency (LEP) status	34%	34%
Special Education (IDEA) status	6%	6%
Race/Ethnicity (Hispanic - White – Black - Other)	82% - 11% - 5% - 2%	79% - 11% - 3% - 6%
Home Language (Spanish - English - Other)	53% - 47% - 0%	56% - 42% - 2%
Economically disadvantaged	93%	94%
504 Plan	0.5%	0.0%
Parent Education Level (some college or higher)	23%	24%

Table 1. Baseline equivalence is shown between students who completed at least 80 Reading Plus lessons and a matched comparison group of students who used Reading Plus minimally or did not use the program (0-19 lessons). Baseline differences across all categories are not statistically significant ($p > .28$).