

## Reading Plus and PARCC in the Orange Public Schools

### School District

Orange Public Schools

### Number of Students in Study

Part 1: 2,121

Part 2: 2,287

### Study Inclusion

#### Requirements

#### PARCC-InSight

Relationship: Students in Grades 3-11 in 2017-18 with the following:

1. Valid spring 2018 (April) PARCC ELA overall scale score and
2. Valid spring 2018 (March – May) Reading Plus InSight overall Proficiency score.

#### Impact of Reading Plus:

Students in Grades 4-11 in 2017-18 with valid PARCC ELA scores from spring 2017 and spring 2018.

#### Study statistics:

##### Pearson's Correlation

Coefficient (r): A measure of the linear relationship between two variables that ranges from -1 to 1. A value of 0 indicates no correlation while a value of .70 or higher is typically classified as a strong, positive correlation and is strong evidence of validity by the National Center for Intensive Intervention (NCII).

##### Area Under Curve (AUC):

AUC is an indicator of overall classification accuracy. AUC values range from 0.5 to 1.0 with a value of 0.5 indicating a prediction that is no better than chance while >0.85 is considered strong classification accuracy by the NCII.

## Purpose of Report

This report focuses on the relationship between the Partnership for Assessment of Readiness for College and Careers (PARCC) English Language Arts/Literacy (ELA) assessment and the Reading Plus InSight assessment, and also on the impact of the Reading Plus instructional intervention on student performance on the PARCC ELA assessment in the Orange Public Schools.

## Summary of Findings

1. InSight and PARCC ELA are strongly correlated and have equivalent expectations for proficiency which makes InSight a strong predictor of PARCC ELA performance.
  - There is a strong, statistically significant correlation between InSight proficiency and the overall PARCC ELA scale score in grades 4-11 as well as between InSight and the PARCC Reading sub-score in grades 3-11 ( $r=.70$ -.86,  $p<.001$ ).
  - Eighty-one percent (81%) of students who were classified as above/below grade level on InSight were also classified above/below expectations on the PARCC ELA assessment.
  - In relation to PARCC, InSight meets Area Under the Curve (AUC) classification accuracy standards established by the National Center for Intensive Intervention (NCII) across grades 3-11.
2. Students who used Reading Plus with reasonable fidelity (completed 80+ lessons) performed better on PARCC ELA in spring 2018 than students with moderate (40-79 lessons) or minimal (0-39 lessons) use. Students who completed 80+ lessons had the
  - highest percentage of students advancing to a higher PARCC ELA performance level, and the
  - lowest percentage of students dropping to a lower PARCC ELA performance level.

## Results Part 1: Correlations and Classification Accuracy

Figure 1 shows that the overall PARCC ELA scale score and overall InSight reading proficiency are strongly correlated in grades 4-11 ( $r=.71$ -.86,  $p<.001$ ). Grade 3 slightly missed the threshold ( $r=.68$ ,  $p<.001$ ). The results are based on 2,121 Orange Public School students who were administered both the PARCC ELA and InSight assessments between March and May 2018 (see Appendix 1 for details). Figure 2 shows that there are similarly strong correlations between the PARCC Reading sub-score and overall InSight proficiency across grades 3-11 ( $r=.70$ -.86,  $p<.001$ ).

Figure 3 demonstrates that InSight and PARCC ELA have similar expectations for proficiency as over three-quarters of students who were classified as above/below grade level on InSight were correctly classified as above/below expectations on PARCC ELA assessment. Figure 4 further supports the finding that InSight performance can accurately classify PARCC ELA performance. The results of an Area Under the Curve (AUC) analysis indicate that InSight's ability to classify students as meeting or not meeting overall PARCC ELA performance level

expectations surpasses a criterion established by the National Center for Intensive Intervention (Figure 4). Figures 1-4 also show that the InSight-PARCC ELA correlations and classification accuracy are consistently strong across all grade levels. (Note: Appendix 2 consolidates results from Figures 1-4 into a single table.)

Correlation Between PARCC ELA and InSight Reading Proficiency

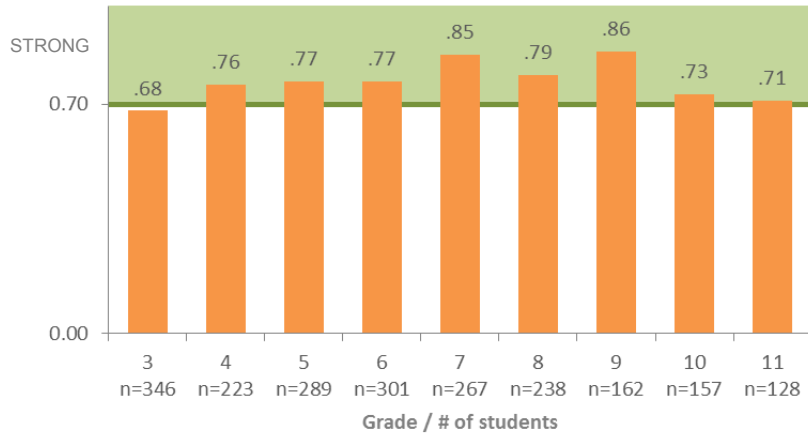


Figure 1. The correlation between the overall PARCC ELA scale score and the InSight Reading Proficiency Index is shown at each grade level. All Pearson correlation coefficients are statistically significant at  $p < .001$ .

Correlation Between PARCC Reading Sub-Score and InSight Reading Proficiency

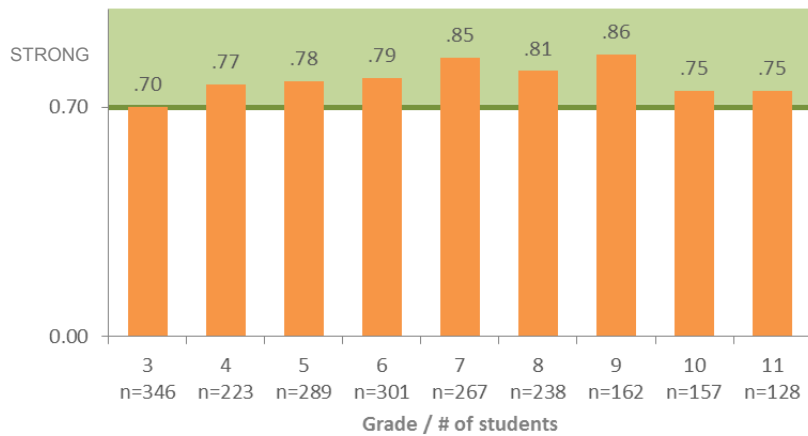
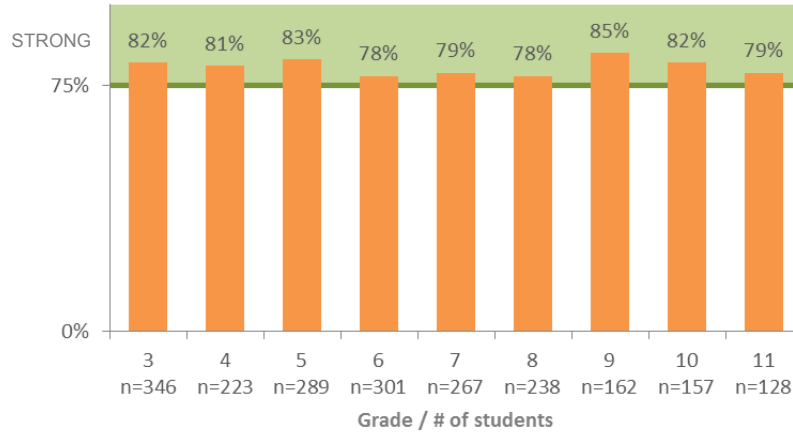


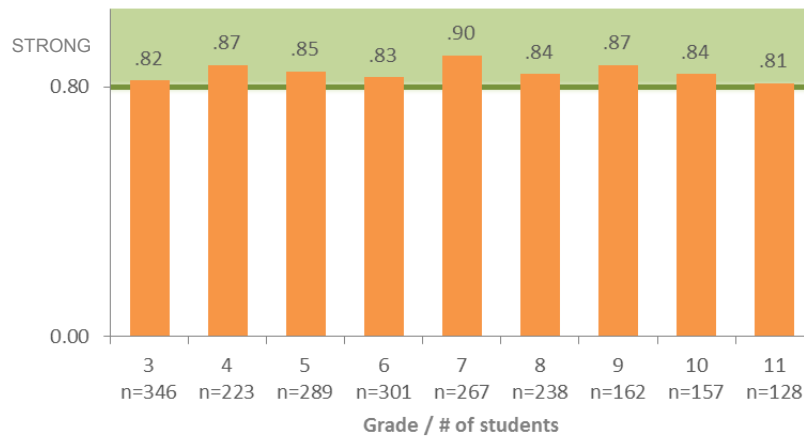
Figure 2. The correlation between the PARCC Reading sub-score and the InSight Reading Proficiency Index is shown at each grade level. All Pearson correlation coefficients are statistically significant at  $p < .001$ .

Overall Classification Accuracy of InSight for PARCC ELA



**Figure 3.** Percentage of students classified as above/below grade level on InSight who were also classified above/below expectations on PARCC. Although the NCII requires this statistic as part of its evaluation process, it does not set a threshold criterion.

Area Under Curve (AUC) Classification Accuracy of InSight for PARCC ELA



**Figure 4.** Area Under Curve (AUC) classification accuracy of InSight for PARCC ELA. All AUC values are statistically significant at  $p < .001$  and meet NCII Technical Standard 1: Lower Bound of the AUC Confidence Interval  $\geq 0.80$ .

Table 1 shows the relationship between InSight and PARCC ELA based on results from grade 6-8 students from Colorado in spring 2017. These strong correlation and classification accuracy values are very similar to grade 6-8 results from Orange Public Schools shown in Figures 1-4. These results from an additional sample of students provides further evidence that InSight and PARCC ELA are measuring reading/ELA performance in comparable ways.

**Table 1:** Colorado InSight and PARCC ELA Correlation and Classification Accuracy, Spring 2017

Grade	(A) PARCC Overall ELA Scale Score & InSight Overall Reading Proficiency Correlation*	(B) PARCC Reading Sub-Score & InSight Overall Reading Proficiency Correlation*	(C) Overall Classification Accuracy <i>% of Students Classified Above/Below Grade Level on InSight Who Were Also Classified Above/Below Expectations on PARCC</i>	(D) Area Under the Curve <i>AUC is another overall indicator of classification accuracy. Value of 0.80 or higher meets NCII classification accuracy criteria**</i>
Gr 6 (n=164)	.71	.74	78%	0.85
Gr 7 (n=263)	.79	.81	84%	0.83
Gr 8 (n=101)	.81	.83	80%	0.80

\*All correlations significant at  $p < .001$

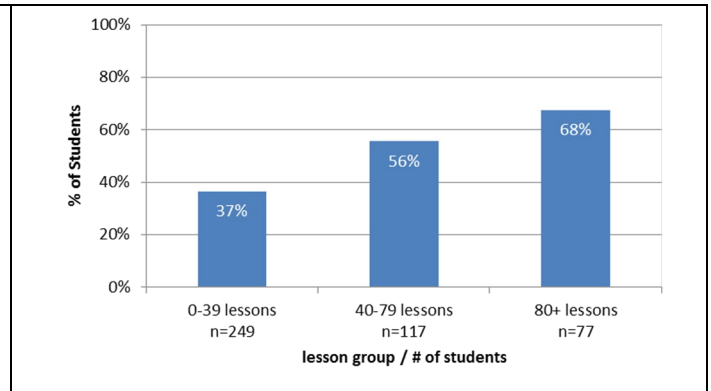
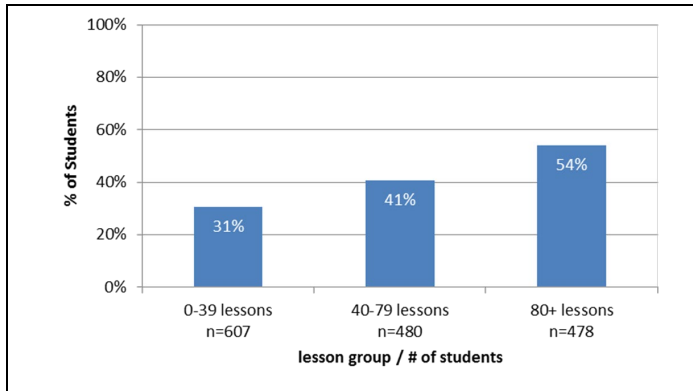
\*\*National Center for Intensive Intervention (NCII) Technical Standard 1: Lower Bound of the AUC Confidence Interval  $\geq 0.80$

## Results Part 2: Impact of Reading Plus on PARCC ELA Results

Percent of Students Who Advanced to a Higher PARCC ELA Level in Spring 2018 by Reading Plus Lesson Group

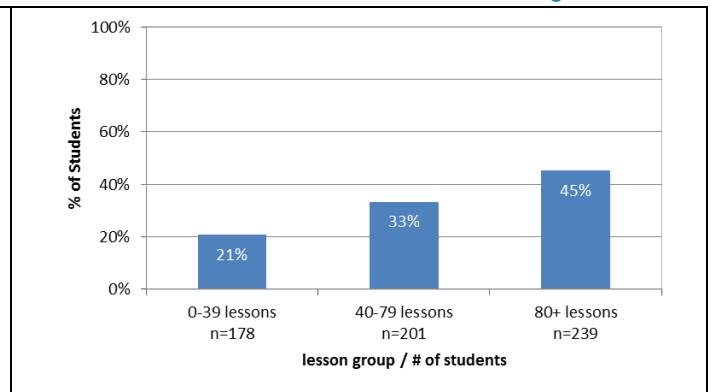
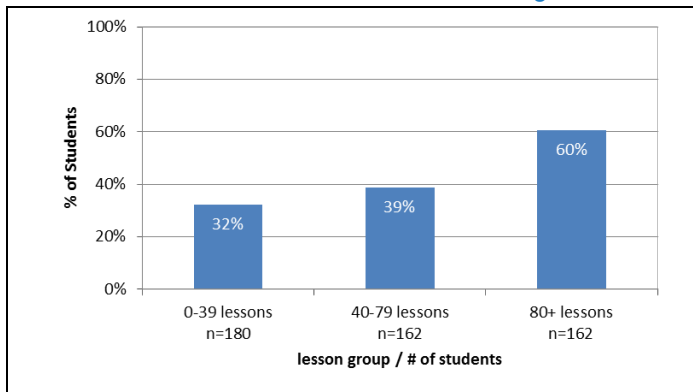
5.1: Advanced to a Higher Level, If Possible

5.2: Advanced Out of Level 1 to a Higher Level



5.3: Advanced Out of Level 2 to a Higher Level

5.4: Advanced Out of Level 3 to a Higher Level



**Figure 5.** Percent of students who advanced to a higher PARCC ELA performance level in spring 2018 compared to their spring 2017 performance level by Reading Plus lesson group. Figure 5.1 represents the overall percentage of students who were in PARCC ELA level 1, 2 or 3 in spring 2017 and advanced to a higher level in spring 2018. Figures 5.2 – 5.4 represent the percentage of students who were in PARCC ELA level 1, 2 or 3, respectively, in spring 2017 and advanced to a higher level in spring 2018. Reading Plus lessons are grouped by minimal use (0-39 lessons), moderate use (40-79 lessons), and good use (80+ lessons). There are statistically significant differences ( $p < .001$ ) between lesson groups in all figures: 5.1 ( $\chi^2 = 60.27$ ), 5.2 ( $\chi^2 = 27.40$ ), 5.3 ( $\chi^2 = 29.76$ ), 5.4 ( $\chi^2 = 27.08$ ).

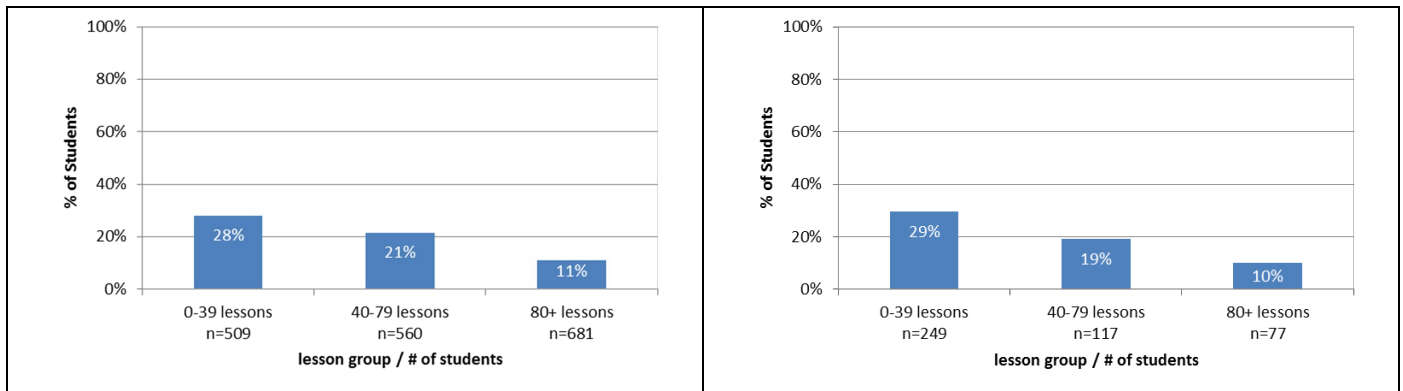
Figure 5 demonstrates how increased Reading Plus use is associated with larger performance level gains on PARCC ELA. Student use of Reading Plus was grouped by minimal use (0-39 lessons), moderate use (40-79 lessons), and good use (80 or more lessons). Figures 5.1 – 5.4 show that students who completed 80 or more lessons consistently had a higher percentage of students advance to a higher PARCC ELA performance level in spring 2018. Overall, 54% of students who were in PARCC ELA performance level 1, 2, or 3 advanced to a higher level if they completed 80 or more lessons. This compares favorably to the moderate and minimal use groups where 41% and 31% of students, respectively, advanced to a higher PARCC ELA level in spring 2018 (Figure 5.1).

Another important aspect of the impact of Reading Plus is shown in Figure 6. Even if students do not advance to a higher PARCC ELA performance level, it is critical that, at a minimum, they maintain their current performance level as grade-level standards rise. Figures 6.1 – 6.4 show that students with 80 or more lessons consistently had a lower percentage of students drop to a lower PARCC ELA performance level in spring 2018. Overall, only 11% of students who were in PARCC ELA performance level 2, 3, or 4 dropped to a lower level if they completed 80 or more lessons. Nearly twice as many students with moderate use (21%) and more than twice as many students with minimal use (28%) dropped to a lower PARCC ELA level in spring 2018 (Figure 6.1).

Percent of Students Who Dropped to a Lower PARCC ELA Level in Spring 2018 by Reading Plus Lesson Group

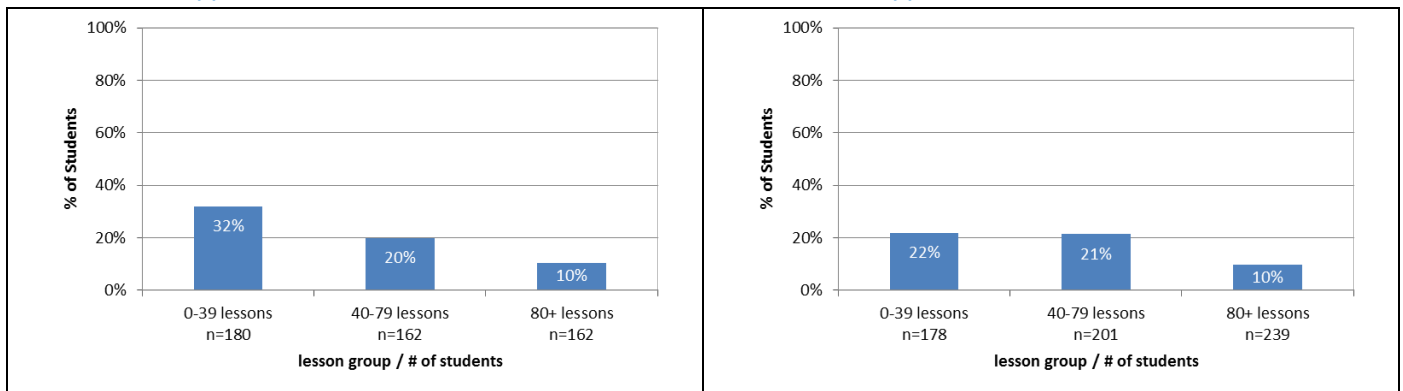
6.1: Dropped to a Lower Level, If Possible

6.2: Dropped from Level 2 to Level 1



6.3: Dropped from Level 3 to a Lower Level

6.4: Dropped from Level 4 to a Lower Level



**Figure 6.** Percent of students who dropped to a lower PARCC ELA performance level in spring 2018 compared to their spring 2017 performance level. Figure 6.1 represents the overall percentage of students who were in PARCC ELA level 2, 3, or 4 in spring 2017 and dropped to a lower level in spring 2018. Figures 6.2 – 6.4 represent the percentage of students who were in PARCC ELA level 2, 3, or 4, respectively, in spring 2017 and dropped to a lower level in spring 2018. Reading Plus lessons are grouped by minimal use (0-39 lessons), moderate use (40-79 lessons), and good use (80+ lessons). There are statistically significant differences ( $p < .001$ ) between lesson groups in all figures: 6.1 ( $\chi^2 = 64.83$ ), 6.2 ( $\chi^2 = 20.60$ ), 6.3 ( $\chi^2 = 29.94$ ), 6.4 ( $\chi^2 = 16.19$ ).

Figures 7-10 refer to a specific cohort of students who were Grade 6 students during the 2016-17 school year and Grade 7 students in 2017-18. Orange Public Schools staff were interested why this particular cohort of students had such a large percentage of students met PARCC ELA expectations in spring 2018. One reason is that this cohort of students had the highest percentage of students who used Reading Plus well (completed 80 or more lessons) during the 2017-18 school year (Figure 7). Similar to the results shown for all grades combined in Figures 5 and 6, students from this cohort who completed 80 or more lessons had the highest percentage of students advance to a higher PARCC ELA level and the lowest percentage drop to a lower level (Figure 8).

Percent of Students Who Had Good Reading Plus Use During the 2017-18 School Year by Grade

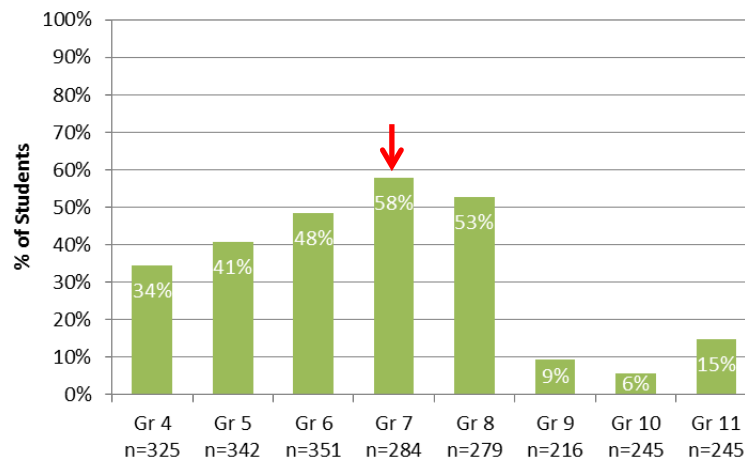


Figure 7. Percent of students who had good Reading Plus use during the 2017-18 school year. Good use is defined as completing 80 lessons which is 80% of the recommended minimum amount for the typical student to have used with fidelity.

Change in PARCC ELA Performance for Grade 6 Students in Spring 2017 as Grade 7 Students in Spring 2018 by Reading Plus Lesson Group

8.1: Advanced to a Higher Level, If Possible

8.2: Dropped to a Lower Level, If Possible

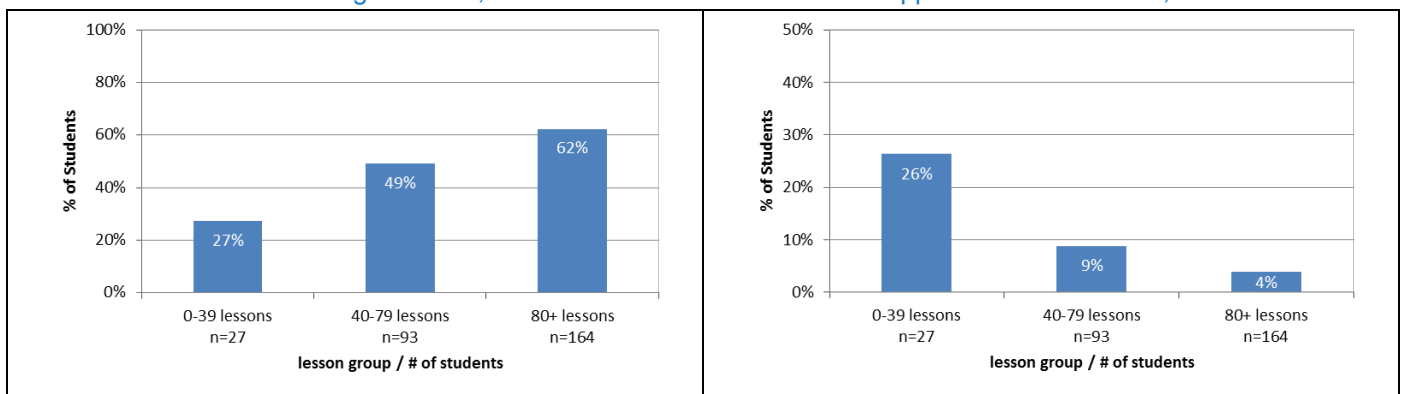
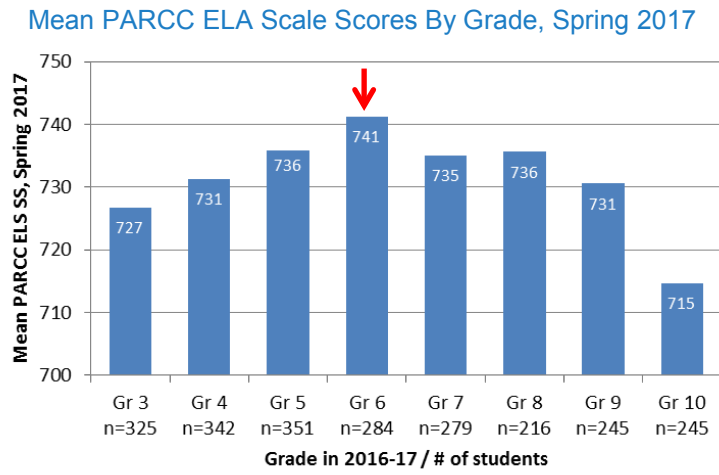


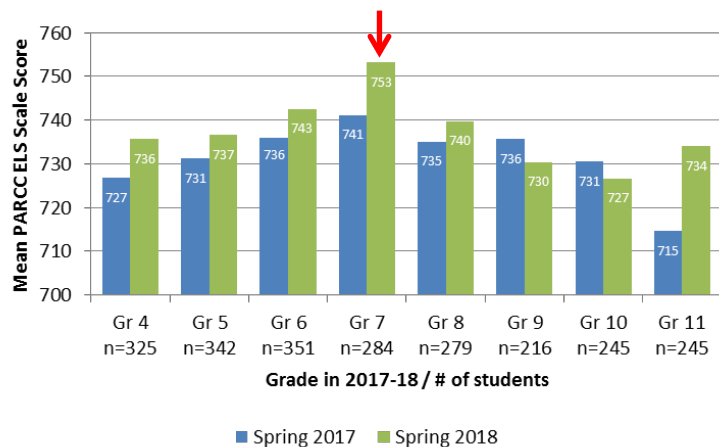
Figure 8. Two different views of how PARCC ELA performance changed for a single cohort of students who were enrolled in Grade 6 in the 2016-17 school year and Grade 7 in the 2017-18 school year. Figure 7.1 represents the overall percentage of students who were in PARCC ELA level 1, 2 or 3 in spring 2017 and advanced to a higher level in spring 2018. Figure 7.2 represents the overall percentage of students who were in PARCC ELA level 2, 3, or 4 in spring 2017 and dropped to a lower level in spring 2018. Reading Plus lessons are grouped by minimal (0-39 lessons), moderate (40-79 lessons), and good use (80+ lessons). There are statistically significant differences ( $p < .01$ ) between lesson groups in both figures: 8.1 ( $\chi^2 = 9.20$ ), 8.2 ( $\chi^2 = 11.87$ ).

Figure 9 shows that the cohort of students who were in Grade 7 during the 2017-18 school year had the highest mean PARCC ELA scale score as Grade 6 students in spring 2017. On average, this cohort had more students poised to meet expectations in spring 2018. Combine that with the fact that the cohort had highest percentage of students with good Reading Plus use during the 2017-18 school year (Figure 7), and the cohort not only had the highest mean PARCC ELA scale score in spring 2018 but was the only grade where the mean scale score was above the PARCC ELA cut score of 750 (Figure 10).



**Figure 9.** Mean PARCC ELA scale scores by grade in spring 2017 for students who had PARCC ELA scores in both spring 2017 and spring 2018 and were enrolled in Reading Plus during the 2017-18 school year.

### Mean PARCC ELA Scale Scores By Grade, Spring 2017 and Spring 2018

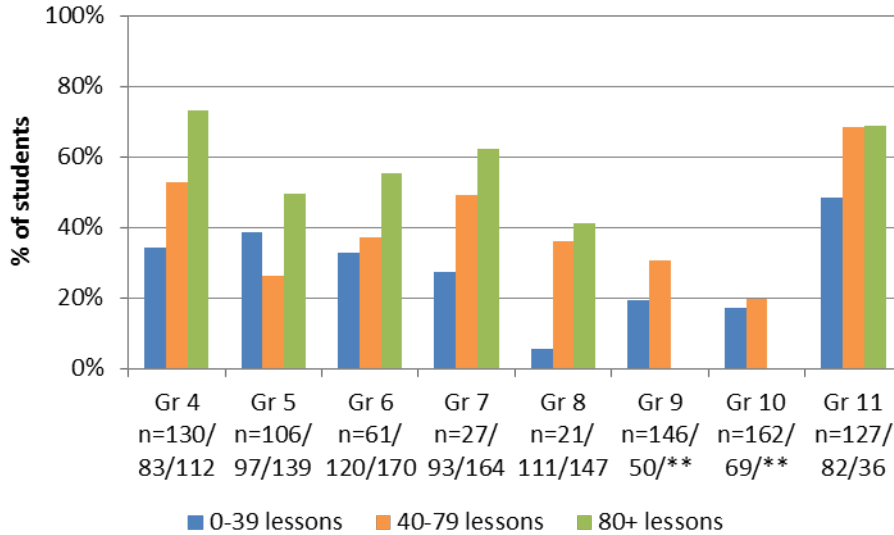


**Figure 10.** Mean PARCC ELA scale scores by grade in spring 2017 and spring 2018 for students who had PARCC ELA scores in both years and were enrolled in Reading Plus during the 2017-18 school year.

Figure 11 profiles the same results as Figure 8.1 did for the Grade 7 cohort but for all grades. It is clear that the Grade 7 cohort was not the only one where students who had good Reading Plus use (80 or more lessons) had the highest percentage of students advancing to a higher PARCC ELA performance level.



Percent of Students Advancing to a Higher PARCC ELA Level by Grade and Reading Plus Lesson Group, Spring 2017 to Spring 2018



**Figure 11.** Percent of students who advanced to a higher PARCC ELA performance level in spring 2018 compared to their spring 2017 performance level by student grade level during the 2017-18 school year and Reading Plus lesson group. Figure 11 represents the overall percentage of students who were in PARCC ELA level 1, 2 or 3 in spring 2017 and advanced to a higher level for each grade and Reading Plus lesson group. Reading Plus lessons are grouped by minimal (0-39 lessons), moderate (40-79 lessons), and good use (80+ lessons). There are statistically significant differences between lesson groups in Grades 4-8 and 11: Gr 4 ( $\chi^2=26.19$ ,  $p<.001$ ), Gr 5 ( $\chi^2=8.47$ ,  $p<.05$ ), Gr 6 ( $\chi^2=9.81$ ,  $p<.01$ ), Gr 7 ( $\chi^2=9.20$ ,  $p<.01$ ), Gr 8 ( $\chi^2=8.32$ ,  $p<.05$ ), Gr 9 (Not Significant), Gr 10 (Not Significant), Gr 11 ( $\chi^2=7.24$ ,  $p<.05$ ). \*\*Results not shown for lesson groups with fewer than 20 students ( $n<20$ ).



**Appendix 1:** Number of Students by School and Grade Included in Correlation and Classification Accuracy Analysis

School	Gr 3	Gr 4	Gr 5	Gr 6	Gr 7	Gr 8	Gr 9	Gr 10	Gr 11	Total
Cleveland Street School	33	23	26	18	23	0	0	0	0	123
Forest Street School	52	38	35	39	35	0	0	0	0	199
Heywood Avenue School	33	37	31	39	27	0	0	0	0	167
Lincoln Avenue Elementary	43	0	58	73	59	0	0	0	0	233
Oakwood Ave Community School	21	14	18	13	13	0	0	0	0	79
Orange High School	0	0	0	0	0	0	5	157	128	290
Orange Prep Academy	0	0	0	0	0	238	120	0	0	358
Park Avenue School	47	46	45	37	41	0	0	0	0	216
Rosa Parks Community School	117	75	76	82	69	0	0	0	0	419
STEM Innovation Academy	0	0	0	0	0	0	37	0	0	37
<b>TOTAL</b>	<b>346</b>	<b>233</b>	<b>289</b>	<b>301</b>	<b>267</b>	<b>238</b>	<b>162</b>	<b>157</b>	<b>128</b>	<b>2,121</b>

**Appendix 2:** Table Version of Figures 1-4, InSight and PARCC ELA Correlation and Classification Accuracy

Grade	(A) PARCC Overall ELA Scale Score & InSight Overall Reading Proficiency Correlation*	(B) PARCC Reading Sub-Score & InSight Overall Reading Proficiency Correlation*	(C) Overall Classification Accuracy <i>% of Students Classified Above/Below Grade Level on InSight Who Were Also Classified Above/Below Expectations on PARCC</i>	(D) Area Under the Curve <i>AUC is another overall indicator of classification accuracy. Value of 0.80 or higher meets NCII classification accuracy criteria**</i>
Gr 3 (n=346)	.68	.70	82%	.82
Gr 4 (n=223)	.76	.77	81%	.87
Gr 5 (n=289)	.77	.78	83%	.85
Gr 6 (n=301)	.77	.79	78%	.83
Gr 7 (n=267)	.85	.85	79%	.90
Gr 8 (n=238)	.79	.81	78%	.84
Gr 9 (n=162)	.86	.86	85%	.87
Gr 10 (n=157)	.73	.75	82%	.84
Gr 11 (n=128)	.71	.75	79%	.81

**Appendix 3:** Number of Students by School and Grade Included in Reading Plus “Impact on PARCC ELA Analysis

School	Gr 4	Gr 5	Gr 6	Gr 7	Gr 8	Gr 9	Gr 10	Gr 11	Total
Career and Innovation Academy	0	0	0	0	0	2	2	2	6
Cleveland Street School	31	28	25	29	0	0	0	0	113
Forest Street School	38	34	42	34	0	0	0	0	148
Heywood Avenue School	36	39	41	31	0	0	0	0	147
Lincoln Avenue Elementary	72	73	82	58	0	0	0	0	285
Oakwood Ave Community School	14	19	15	12	0	0	0	0	60
Orange High School	0	0	0	0	0	9	243	243	495
Orange Preparatory Academy	0	0	0	0	279	157	0	0	436
Park Avenue School	46	52	50	42	0	0	0	0	190
Rosa Parks Community School	85	95	96	77	0	0	0	0	353
Scholars Academy	2	0	0	0	0	0	0	0	2
STEM Innovation Academy	0	0	0	0	0	45	0	0	45
Unknown (non-RP)	1	2	0	1	0	3	0	0	7
TOTAL	325	342	351	284	279	216	245	245	2,287