Efficacy Analysis:

A Retrospective Investigation of Longitudinal Performance Change From 2023 to 2024 Using Florida FAST Math Data

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Prodigy

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Executive Summary

This retrospective study followed the progression of over 3,700 students in 4th, 5th, and 6th grade in Florida who used Prodigy during the 2023-2024 school year. The study looked at each cohort of students' test scores on the Florida Assessment of Student Thinking (FAST) math test compared to the same cohort's scores from the prior year to determine growth. The analysis reveals that the cohorts of students who used Prodigy significantly outperformed the state average in terms of year-over-year growth on the FAST math test.

Specifically, students in Prodigy Treatment schools, defined as those where at least 50% of the students in a grade answered 10+ questions monthly and averaged over 100 questions per student and further segmented by intentional usage based on teachers creating 0 or more assignments or creating 10 or more assignments, outperformed the state average in both year-over-year mean scaled scores and the percentage of students meeting state standards in all three grades.

These findings reinforce the value of Prodigy not only as an engaging math platform but as an effective instructional tool when intentionally implemented, offering measurable academic growth in math achievement for elementary students.

Background

The publicly available Florida Assessment of Student Thinking (FAST) test scores aggregated at the grade level present a great opportunity for Prodigy to conduct an internal investigation of efficacy. This analysis compares the longitudinal performance change on the FAST math test from 2023 to 2024 among two sets of "Prodigy Treatment" schools in 4th, 5th, and 6th grade, to the state average performance change across the two test years. The goal is to determine if there is a noticeable difference in test score performance for the Prodigy Treatment schools versus the state average.

Sample

For this longitudinal analysis, we looked at school grade-level cohorts that were in 4th, 5th, and 6th grade in 2024 separately. This means the 4th-grade school cohorts in 2024 took part in the 2023 test as 3rd graders; similarly, the 5th-grade school cohorts in 2024 were 4th-grade test takers in 2023, and the 6th-grade school cohorts in 2024 were 5th graders in 2023. We tracked the same cohorts of students across the two test years to observe their test performance change. Within each grade level, schools with intentional Prodigy usage throughout the 2024 school year that participated in both the 2023 and 2024 FAST math tests constituted the analysis sample. **The average year-over-year changes in the test performance from 2023 to 2024 among the two sets of Prodigy Treatment schools are compared with the state average performance change**. Selection criteria for the **Prodigy Treatment schools** are:

- On average, 50% or more of the students in each of the examined grade levels in a school answered at least 10 questions in Prodigy Math monthly between September 2023 and May 2024.
- The average monthly questions answered on Prodigy Math per student was 100 questions or more between September 2023 and May 2024.
- Teachers creating assignments in the product is important for the intentional usage of Prodigy as a learning tool. In this analysis, we compared school grades in which the teachers created 0 or more Prodigy assignments to school grades in which the teachers created 10 or more assignments to demonstrate the increased impact of intentional usage.

This sample of high Prodigy Math usage schools across 4th, 5th, and 6th grade included 43 school grade-level cohorts and 3,764 students tested across 24 districts in Florida from 2023 and 2024. The sample did not exclude any classrooms or schools that met the above criteria.

The **state average** performance change on FAST math tests from 2023 to 2024 was calculated by applying a student-weighted average across the scores of the schools that had test scores available in both 2023 and 2024, which is consistent with the data reported by the Florida Department of Education (see here).

Data

The year-over-year FAST math test score change for each grade level was calculated by first subtracting each school's grade level test score in 2024 from the cohort's previous year's test score in 2023, and then applying a student-weighted average across all schools. Two test performance indices were examined: **the mean scaled score and the percentage of students who met the state standard**.

The table below shows the usage statistics of the Prodigy Treatment schools, segmented by grade level and intentional usage, i.e., 0+ assignments created and 10+ assignments created. Assignments are a feature within the Prodigy teacher platform that allows a teacher to select specific math skills for their students to work on in Prodigy's game-based learning platform. Teachers can use this to align Prodigy practice to their lesson plan, conduct formative assessments, or do exit tickets. Thus, assignment creation is a signal that teachers were using Prodigy more purposefully with their students.

Table 1. Prodigy usage statistics by grade.

Grade Level in 2024	Assignments Created	Schools with High Prodigy Math Usage (#)	Students Tested in Both 2023 and 2024	% of Enrolled Students Who Answered 10+ Prodigy Math Questions Monthly	Average Monthly Math Questions Answered on Prodigy Math Per Student (#)	Free and Reduced Lunch Ratio (%)
4th grade	0+	28	2,256	67.4%	186	47.1%
	10+	16	1,531	65.6%	223	49.2%
5th grade	0+	14	1,074	63.3%	143	52.8%
	10+	12	930	64.2%	143	50.8%
6th grade	0+	6	434	62.6%	149	33.7%
	10+	5	346	63.7%	147	32.8%

Results

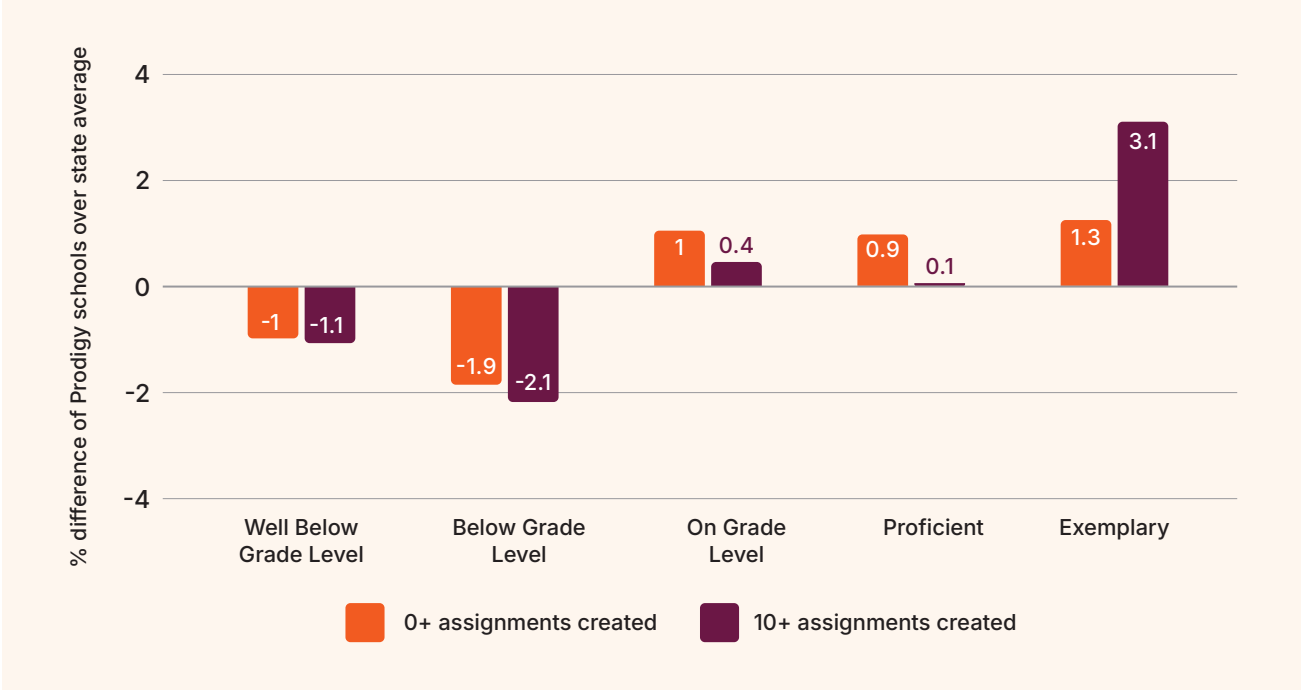
*Please note that the 2023 FAST test results were based on provisional achievement level cuts, whereas the 2024 results were reported on a new scale (see note from Florida Department of Education). Consequently, the mean scaled scores in 2024, as reported, appeared much lower than in 2023.

4th Grade

The state average change in the mean scaled score from 2023 to 2024 for 4th graders in Florida was -87 points. In comparison, the 0+ assignments created high Prodigy Math usage schools showed improved year-over-year performance change of -85.3 points. The 10+ assignments created high Prodigy Math usage schools showed an even better year-over-year performance change of -84.8 points.

There was a 1% state average decline in the percentage of students who met the state standard from 2023 to 2024. The 0+ assignments created in high Prodigy Math usage schools saw an increase of 1.9% of students meeting state standards, whereas the 10+ assignments created schools had an increase of 2.3% of students meeting state standards, suggesting that high Prodigy usage helped boost the math achievement among 4th graders.

When we broke down the performance comparisons by the achievement levels according to the FAST fact sheet (link), we found that, compared to the state average, there was a decrease in the percentage of students being well below (0+ assignments create: -1.8%; 10+ assignments created: -2.2%) or below grade level (0+ assignments create: -1.1%; 10+ assignments created: -1.2%) and an increase in on grade level (0+ assignments create: +1.9%; 10+ assignments created: +1.8%), proficient (0+ assignments create: +0.9%), and in particular, exemplary (0+ assignments create: +0.7%; 10+ assignments created: +2.9%) from the high Prodigy usage schools (see the chart below).

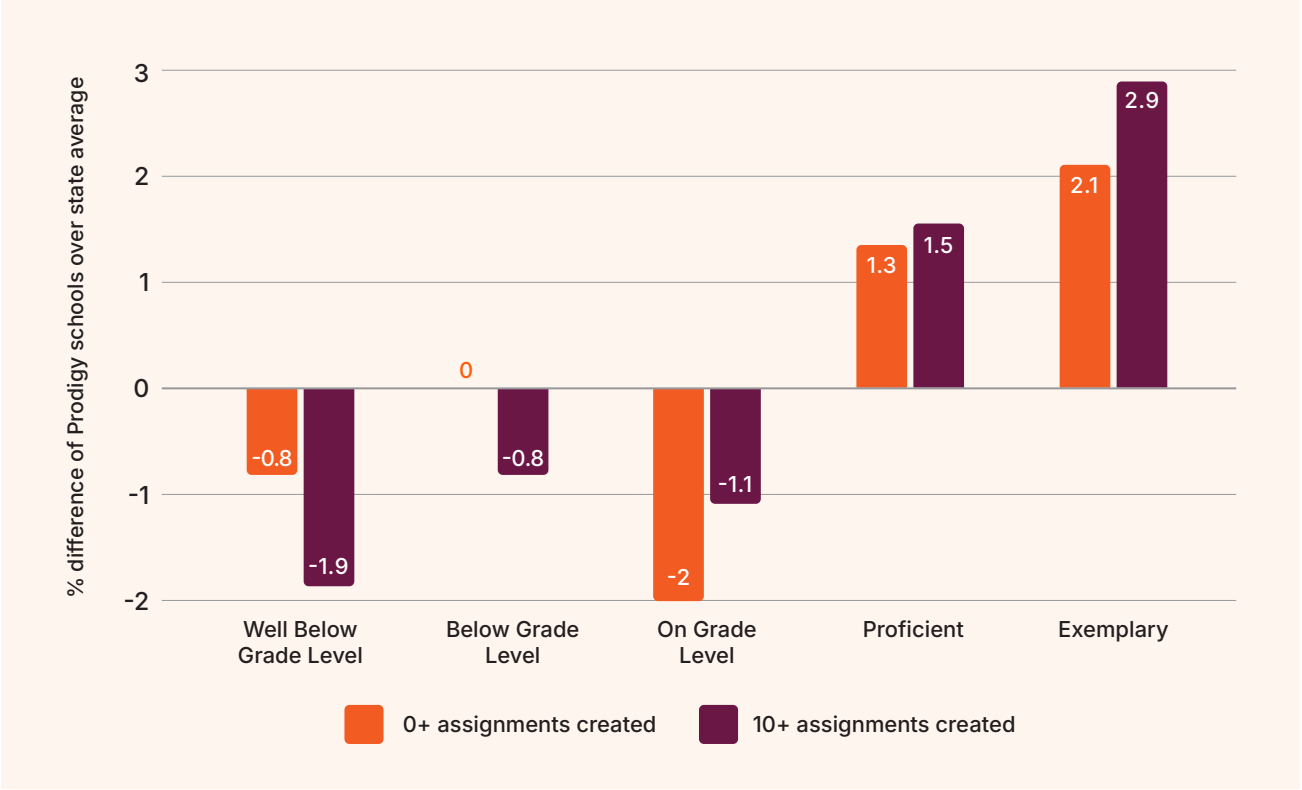


5th Grade

For 5th graders in Florida, there was a state average change of -91 points in the mean scaled score. The 0+ assignments created high Prodigy Math usage schools showed a smaller drop of -90.7 points. The 10+ assignments created high Prodigy Math usage schools had a further drop of -89.9 points.

In terms of the percentage of students meeting the state standard, while the state average showed a decrease of 5%, the 0+ assignments high Prodigy Math usage schools had a smaller decline of -3.6% whereas the 10+ assignments high Prodigy Math usage schools experienced a decline of -1.7%.

When comparing to the state average on the achievement levels, the Prodigy treatment schools had an increase in the percentage of students in proficient (0+ assignments create: +2.0%; 10+ assignments created: +2.4%) and exemplary (0+ assignments create: +1.8%; 10+ assignments created: +2.6%) while having a smaller percentage of students in well below grade level (0+ assignments create: -1.7%; 10+ assignments created: -3.0%).

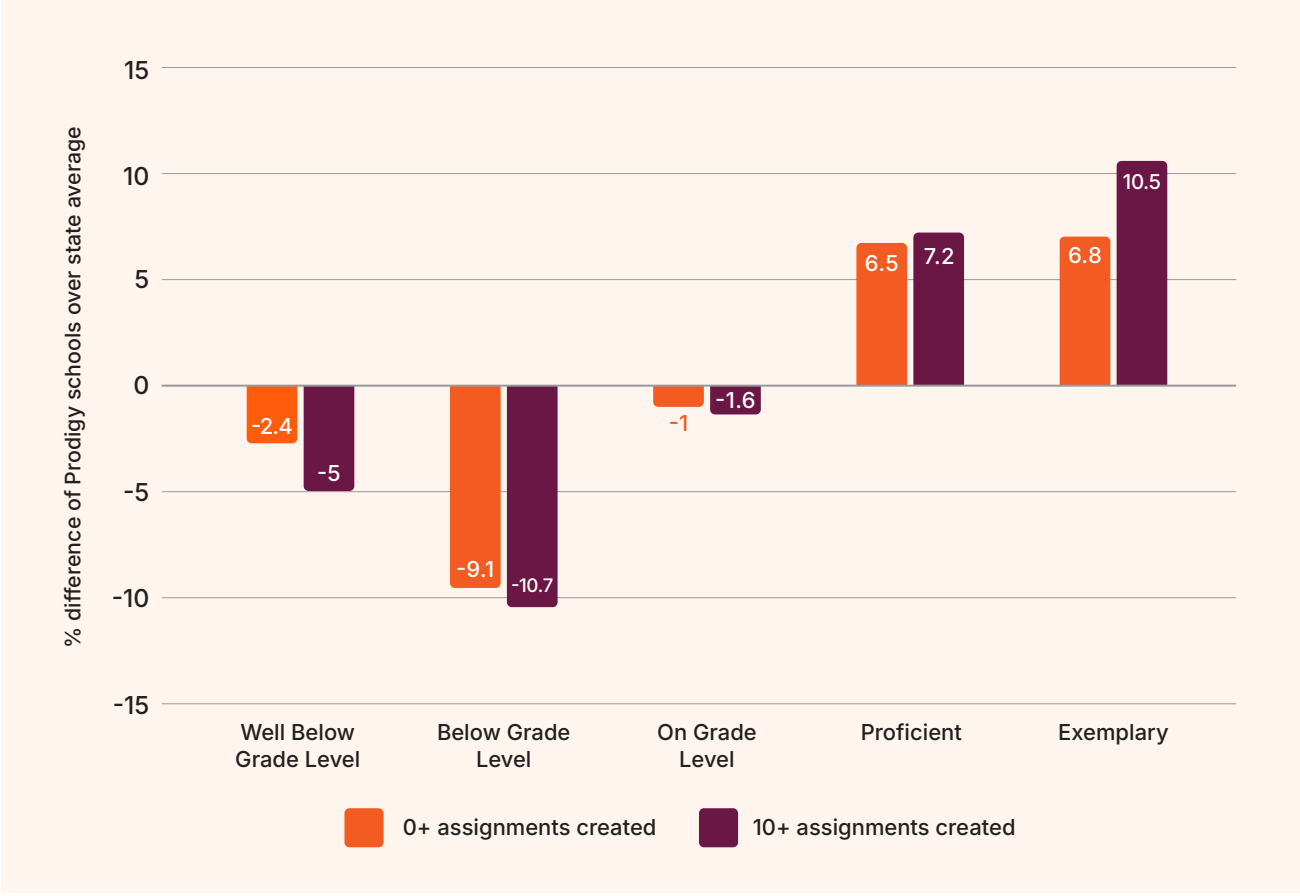


6th Grade

We saw a larger impact of Prodigy in 6th grade. Compared to the -90-point year-over-year change at the state level, the 0+ assignments created high Prodigy Math usage schools had a -86.3-point change, and the 10+ assignments created high Prodigy Math usage schools had a -83.3-point change.

Moreover, while the state average percentage of students meeting the state standard increased by 1%, the high Prodigy Math usage schools improved by 12.2% for 0+ assignments created and 16.4% for 10+ assignments created, respectively.

A similar trend was observed when looking at the achievement levels. Compared to the state average, the Prodigy treatment schools had a greater percentage of students in proficient (0+ assignments create: +5.7%; 10+ assignments created: +6.0%) and exemplary (0+ assignments create: +8.5%; 10+ assignments created: +11.8%) while fewer students in well below grade level (0+ assignments create: -1.5%; 10+ assignments created: -3.4%), below grade level (0+ assignments create: -11.0%; 10+ assignments created: -12.6%), and on grade level (0+ assignments create: -1.0%; 10+ assignments created: -1.4%).



Summary results for 4th to 6th grade are shown below in the table and charts.

Table 2. Average test performance changes from 2023 to 2024 by grade.

		Year-Over-Year Mean Scaled Score Change	Year-Over-Year % Students Met State Standard Change
4th grade	State Average	-87	-1%
	0+ Assignments Created	-85.3	+1.9%
	10+ Assignments Created	-84.8	+2.3%
5th grade	State Average	-91	-5%
	0+ Assignments Created	-90.7	-3.6%
	10+ Assignments Created	-89.9	-1.7%
6th grade	State Average	-90	+1%
	0+ Assignments Created	-86.3	+12.2%
	10+ Assignments Created	-83.3	+16.4%
All Grades (Student-Weighted Average)	State Average	-89.3	-1.6%
	0+ Assignments Created	-87.0	+1.5%
	10+ Assignments Created	-86.4	+2.7%

Across all grades, students in 0+ assignments created at Prodigy Treatment schools saw an average 2.6% relative improvement in the year-over-year mean scaled test score performance over the state average, with 3.1% more students meeting standards than the state average. Furthermore, 10+ assignments created by Prodigy Treatment schools saw an average 3.2% relative improvement in the year-over-year mean scaled test score performance over the state average, with 4.3% more students meeting standards than the state average.

The figures below visually present the comparisons between high Prodigy usage schools and the state average performance.

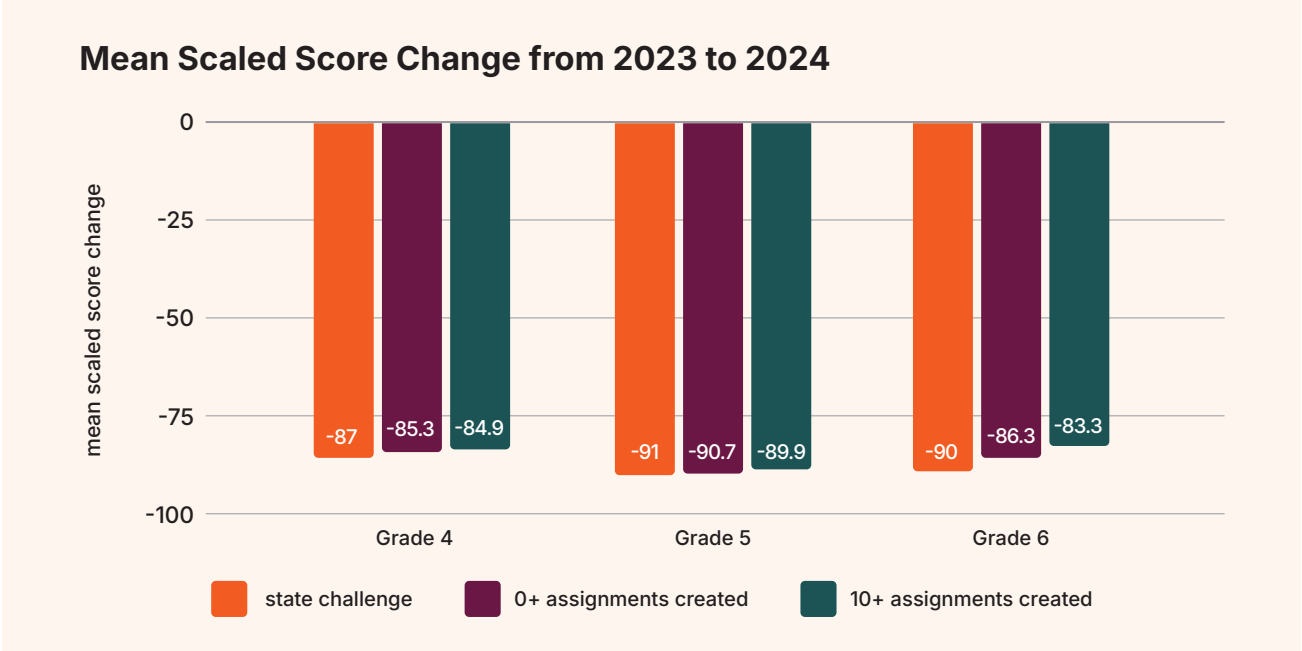


Figure 1a. Average year-over-year test performance change for 4th, 5th, and 6th grade. The orange bars indicate the state average year-over-year change in the mean scaled score for each grade. The red bars indicate the year-over-year change from the schools where 0+ assignments were created. The green bars indicate the year-over-year change from the schools where 10+ assignments were created.

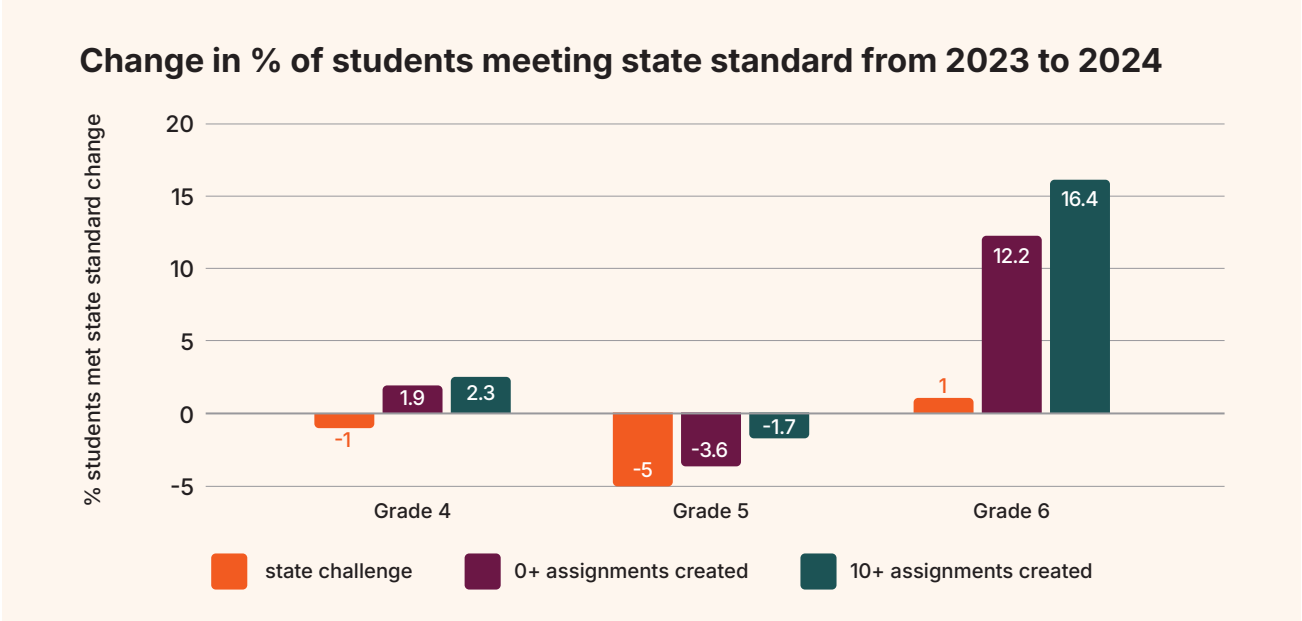


Figure 1b. Average year-over-year test performance change for 4th, 5th, and 6th grade. The orange bars indicate the state average year-over-year change in the percentage of students meeting the state standard in each grade. The red bars indicate the year-over-year change from schools where 0+ assignments were created. The green bars indicate the year-over-year change from schools where 10+ assignments were created.

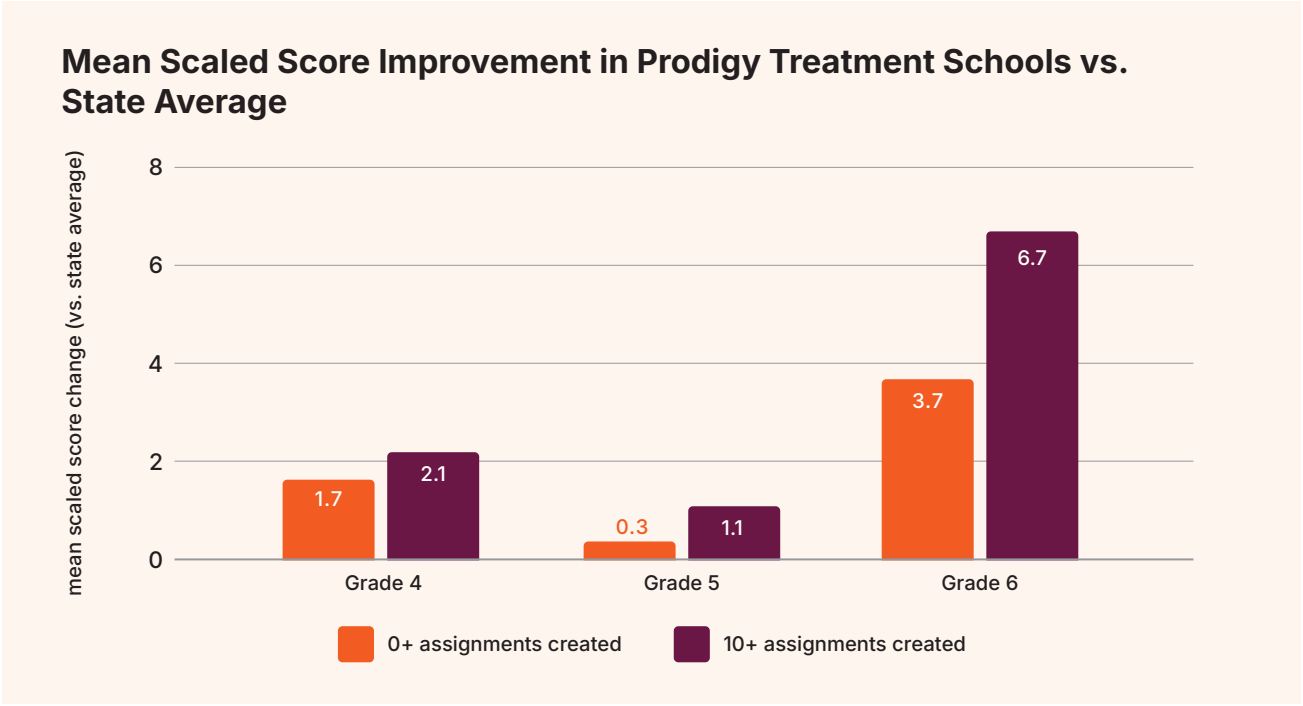


Figure 2a. Year-over-year Improvement in the mean scaled scores over the state average from the high Prodigy usage schools in each grade. The orange bars indicate the improvement from schools where 0+ assignments were created. The red bars indicate the improvement from schools where 10+ assignments were created.

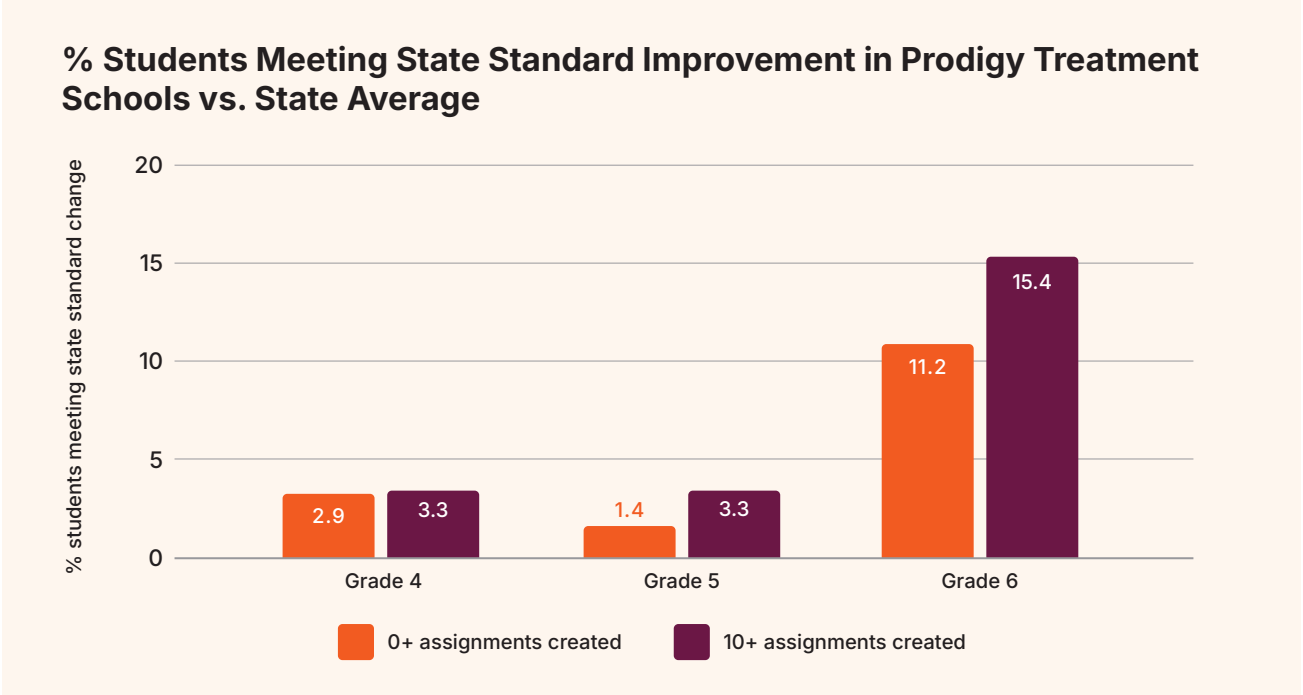


Figure 2b. Year-over-year Improvement in the percentage of students meeting the state standard over the state average from the high Prodigy usage schools in each grade. The orange bars indicate the improvement from schools where 0+ assignments were created. The red bars indicate the improvement from schools where 10+ assignments were created.

Summary

This efficacy analysis examined the year-over-year performance change of over 3,700 students who used Prodigy's math platform in 4th, 5th, and 6th grade on the Florida Assessment of Student Thinking (FAST) math tests from 2023 to 2024. Prodigy Treatment schools, defined as 1) having an average of 50% or more of the students in one of the examined grades in a school answer at least 10 questions in Prodigy monthly and 2) having over 100 average monthly questions answered per student between September 2023 and May 2024, and further segmented by their intentional usage as categorized by 0+ Prodigy assignments created by the teachers and 10+ Prodigy assignments created by the teachers, were compared with the state average performance of their respective grade. The results showed that the Prodigy Treatment schools had stronger year-over-year test score performance than the state average, in terms of both the mean scaled score and the percentage of students who met the state standard, across the three grades examined. On average, Prodigy Treatment schools saw 3.1% (0+ assignments created) and 4.3% (10+ assignments created) more students meeting standards, respectively, compared to the state average. These results, along with prior efficacy evidence, continue to advocate for Prodigy's positive impact as an educational product to help boost math achievement.