

Research Brief: Study Island in an Arizona School District

ESSA Level of Research: Moderate Evidence (Quasi-Experimental)

Student scores and performance-level classifications (PLCs) on state tests are an important part of school accountability under the federal and state governments. When schools invest in programs like Edmentum’s Study Island, they want to know that the programs work. In this study, we examine how using Study Island affects students’ performance on a state test.

Key Term

Performance-Level Classification (PLC): Each student’s test score is assigned a category that reflects the student’s proficiency in the subject. Arizona’s state test classifies students as Minimally Proficient, Partially Proficient, Proficient, and Highly Proficient

Key Findings

- Students in 4th, 5th, and 7th grades who used Study Island earned statistically significantly higher state test scores in math, ranging from 10 to 19 points higher than nonusers.
- Students in 4th, 5th, and 7th grades who used Study Island were more likely to achieve a higher proficiency level on their state test in math, with proficiency rates ranging from 5 percent to 15 percent higher than non-users.
- These students used Study Island for an average of between 25 to 28 minutes a week, for five to eight weeks.

Background

Edmentum partnered with a metro Arizona school district with a majority Hispanic student population for this Study Island research study. This district administers the Arizona’s Measurement of Educational Readiness to Inform Teaching (AzMERIT) test every year to students in grades 3–8 for ELA and math, as well as grades 4 and 8 for science. The district uses Study Island to practice math, ELA, and science skills that are aligned to the Arizona state standards.

Research Questions

We approached this study with the following research questions:

1. How did students in this Arizona school district use Study Island during the 2016–17 school year?
2. Were there significant mean differences in the AzMERIT state test scores between students who used Study Island and those who did not?
3. Was there a significant relationship between AzMERIT proficiency-level categorization and Study Island usage?

Data

We examined student-level data from 18 schools that were Study Island partners during the 2016–17 academic year. The district provided student-level demographic information and AzMERIT data from the previous two years’ testing periods (spring 2016 and spring 2017). These data were matched to Edmentum’s internal Study Island data using student IDs.

Key Term

Student-Level Data: Scores and usage information from individual students

Edmentum’s focus on student-level data sets our research studies apart from other studies that often rely on data at the school or district level. This more granular level of data helps us follow research best practices by seeing how Study Island affects individual students.

Results

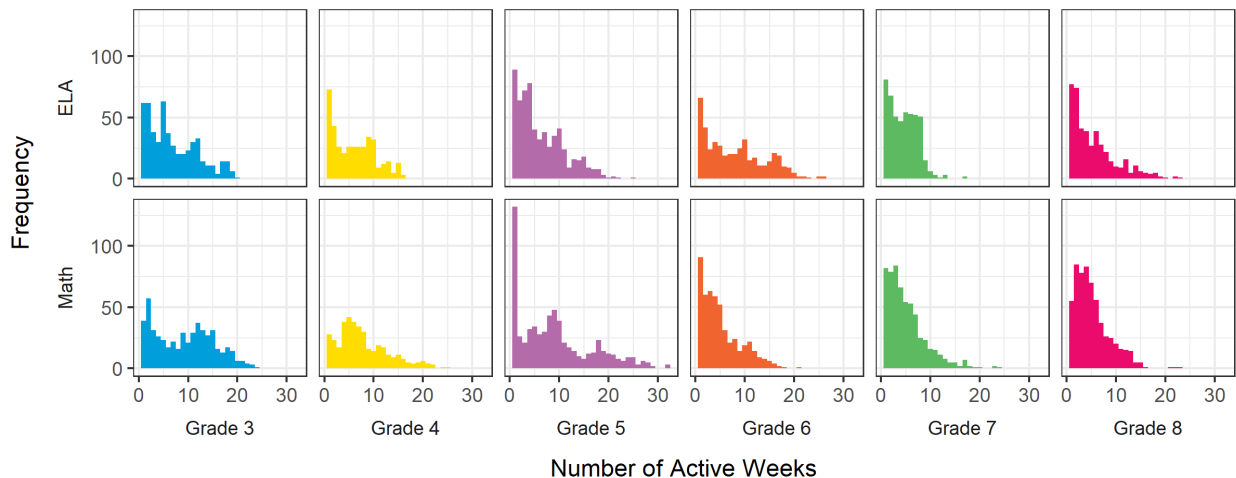
Question 1: Use of Study Island

In general, usage across the district is strong. Of students in 3rd to 8th grade, 56 percent are using Study Island in at least one subject. Math students in the 5th grade spent the most time overall answering practice questions. Across the school year, the district averaged about five and a half hours and 380 questions per student. Students in 3rd grade math and ELA and 6th grade ELA also showed patterns of relatively consistent use. Figure 1 shows the distribution of the number of active weeks by subject and grade.

Key Term

Active Week: A week when a student answered at least one practice question in Study Island

Figure 1. Distribution of Active Weeks by Subject and Grade



Question 2: Relationship Between Study Island and the AzMERIT

Users vs. Non-Users

For this study, we needed to make sure that any differences we saw between Study Island users and non-users were due to students' use of Study Island, not to natural differences in their ability. To analyze ELA and math results, we used a statistical technique called *propensity score matching* (PSM) to create groups of students with equivalent ability based on their 2016 AzMERIT scores. We performed PSM if we had both 2016 and 2017 scores for a group of students, allowing us to compare differences in 2017 AzMERIT outcomes for students of the same ability in 4th to 7th grades. Because state testing begins in third grade, we didn't have 2016 scores of 3rd graders to use.

Key Terms

User: A student who answered at least one practice question in Study Island

Non-User: A student who did not answer any Study Island practice questions

Figure 2 shows the relationship between use of Study Island and ELA AzMERIT scores. We do not find any statistically significant differences in average 2017 AzMERIT scores for students of similar ability between Study Island users and non-users.

Figure 2. Average Scores on the ELA AzMERIT for Study Island Users Compared to Non-Users

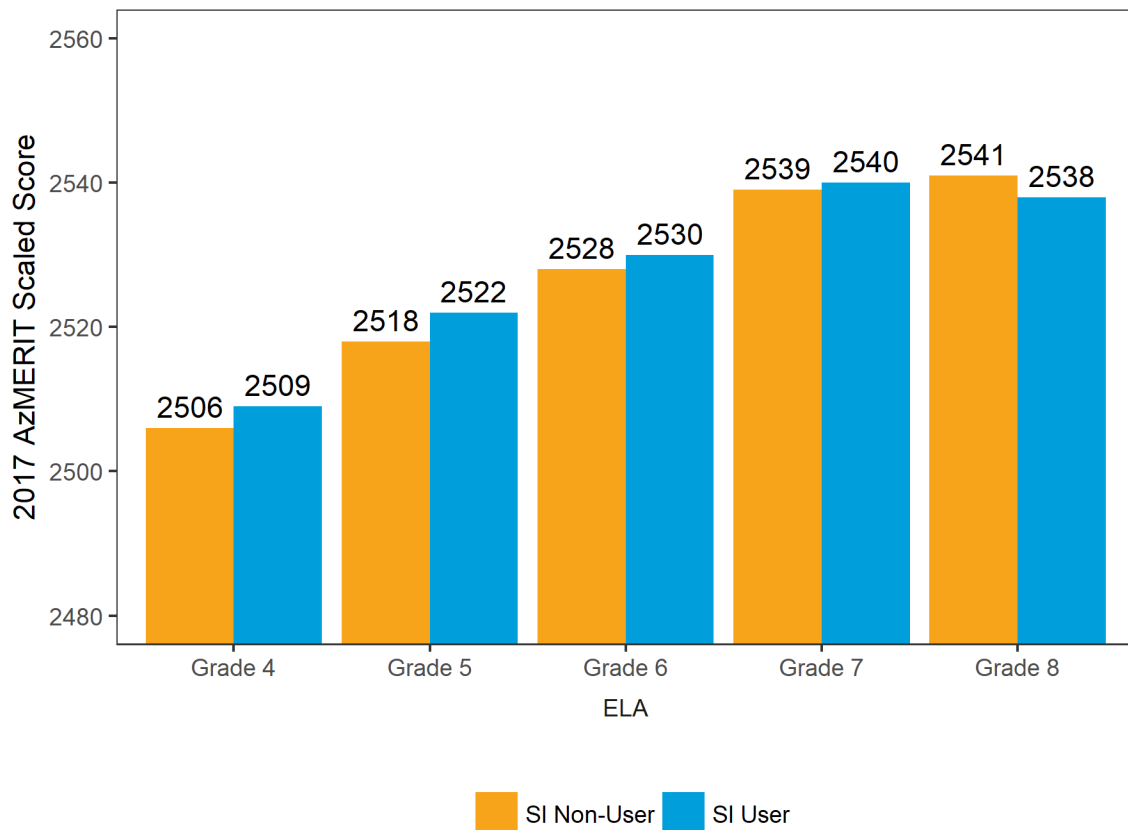
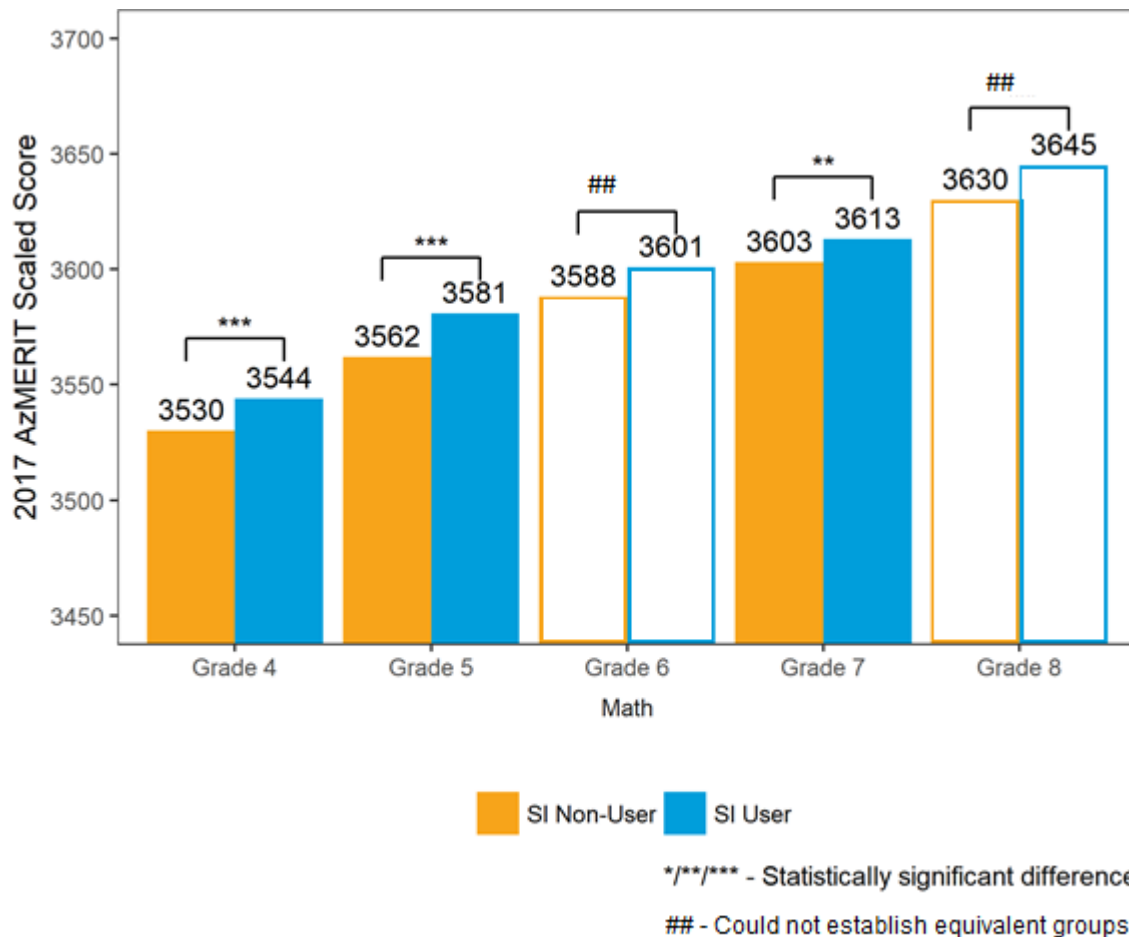


Figure 3 shows the results for math. Students who use Study Island have generally higher scale scores on the math AzMERIT than students of a similar ability who don't use Study Island. Study Island users in 4th, 5th, and 7th grade earned statistically significantly higher scores on

the math AzMERIT than students of a similar ability who did not use Study Island. For 6th and 8th grade, groups of equivalent ability were not able to be established. Students in 4th grade used Study Island for an average of 28 minutes per week for eight weeks, students in 5th grade used Study Island for an average of 34 minutes per week for nine weeks, and students in 7th grade used Study Island for an average of 25 minutes per week for five weeks.

Figure 3: Average Scores on the Math AzMERIT for Study Island Users Compared to Non-Users



Question 3: Relationship Between Study Island and AzMERIT Performance Level

Students’ PLCs are arguably more important than exact scores. Schools want to see students achieving at the Proficient and Highly Proficient levels. Because PLCs form such an important part of school accountability, we used PSM to analyze how using Study Island impacts students’ PLCs.

Users vs. Non-Users

Table 1 compares proficiency rates in ELA for users and non-users. In 4th and 6th grades, Study Island users score more often at the Proficient or Highly Proficient level. However, these differences are not statistically significant.

Table 1. Average ELA AzMERIT Proficiency Rate for Study Island Users Compared to Non-Users

	User	Non-User	Statistically Significant
Grade 4	33%	28%	No
Grade 5	25%	25%	No
Grade 6	26%	21%	No
Grade 7	26%	26%	No
Grade 8	16%	18%	No

Table 2 shows the results for math. Students in the 4th, 5th, and 6th grade who use Study Island are significantly more likely to achieve Proficient or Highly Proficient on the math AzMERIT than students of a similar ability who don't use Study Island. For example, 21% of 4th grade non-users attained proficiency on the math AzMERIT, compared to 36% of students of equivalent ability who used Study Island. Students in the 6th and grade who used Study Island also were more likely to achieve proficiency on the AzMERIT compared to non-users, but because equivalent ability groups could not be obtained, the results are shown as grayed out in the table. We cannot confidently attribute the results for these grades to using Study Island.

Table 2. Average Math AzMERIT Proficiency Rate for Study Island Users Compared to Non-Users

	User	Non-User	Statistically Significant
Grade 4	36%	21%	Yes
Grade 5	41%	28%	Yes
Grade 6	31%	15%	No equivalent groups
Grade 7	18%	13%	Yes
Grade 8	20%	8%	No equivalent groups

Conclusions

Using Study Island and Study Island Benchmarks helped the students in this Arizona school district prepare for the math AzMERIT. When students use Study Island more, answer more questions, and spread their time across more active weeks, we often see positive differences in students' scores and PLCs for math.