



LXDRESEARCH
AT CHARLES RIVER MEDIA

Edpuzzle Efficacy Study:

Correlational Study of Performance on Star
and CAASPP in Reading & Math,
2023-2024



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FEBRUARY, 2025



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PROMISING

LXD Research Recognition for Edpuzzle



This product has been rigorously evaluated and is hereby acknowledged for meeting the educational impact criteria of the Every Student Succeeds Act (ESSA), warranting a **Level 3** for "**Promising**." This recognition is based on its proven effectiveness in enhancing grade-level learning outcomes.

REVIEWED BY THE LXD RESEARCH EXPERT REVIEW PANEL

Rachel Schechter, Ph.D.
Founder of LXD Research

December 16, 2024

DATE

Educators search for high-quality research and evidence-based interventions to strengthen grant applications, to support comprehensive and targeted schools, or to implement new programming in their schools. Evidence requirements under the Every Student Succeeds Act (ESSA) are designed to ensure that states, districts, and schools can identify programs, practices, products, and policies that work across various populations.

Educational programs document their evidence of design, effectiveness, and impact in order to be eligible for federal funding. While there is no singular authority that determines a program's tier, the Department of Education's Office of Educational Technology provides standards to assess the varying levels of strength of research for education products.

The categories for ESSA Evidence are: strong (Tier 1), moderate (Tier 2), and promising (Tier 3) evidence of efficacy, or demonstrates a rationale to be effective (Tier 4).

This product meets the requirements for Tier 3:

- ✓ In correlational design, scores or usage from the program are compared to scores on standardized achievement tests.
- ✓ At least one study with the proper design and implementation with at least two teachers and 30 students show statistically significant, positive findings.
- ✓ The study uses a program implementation that could be replicated.
- ★ A third-party research organization has reviewed the documentation for ESSA validation.



When product designers leverage learning sciences to design and evaluate their programs, educators can better target instruction, and students' skills soar. Through a correlational study design, a statistical evaluation shows that student growth is associated with student product performance. Edpuzzle meets the criteria for LXD Research's ESSA Tier 3 Evidence.

– Rachel Schechter, Ph.D., Founder of LXD Research



EFFICACY STUDY SUMMARY

GRADES 3-11

2023-2024



PROGRAM DESCRIPTION

Edpuzzle is an edtech solution that empowers teachers to create interactive learning experiences for their students. The platform offers standards-aligned, ready-to-go content, easy-to-use editing tools, and real-time student analytics. Edpuzzle supports flipped learning, self-paced learning, hybrid/blended learning, and differentiation. To learn more about the Edpuzzle model of interactive learning, visit <https://edpuzzle.com/>.

STUDY DETAILS

Sample Description

- 2,913 students in grades 3-11
- All students in a medium-sized California school district

Time Frame

August 1, 2023 - June 30, 2024

Implementation Description

- Educators had full access to all Edpuzzle features including dashboards with reports on Edpuzzle performance
- No specific usage or implementation models were prescribed
- Educators received training and district-level support from administrators as needed

Methodology

- Correlation and regression for Edpuzzle performance with either Spring Star Math or Reading, or the California State Test-CAASPP



STUDY CONTEXT

Edpuzzle contracted LXD Research, a third-party research firm, to examine whether Edpuzzle performance and usage among 3rd-11th graders was associated with improved standardized assessment outcomes during the 2023-24 school year. In a medium-sized California school district, educators were trained on Edpuzzle by their district technology leaders and staff. This retrospective study analyzed the use of Edpuzzle across Humanities and STEM subjects, and whether their performance and usage in these subjects predicted standardized ELA and Math outcomes, respectively.

KEY FINDINGS

There was a positive, significant relationship between performance on relevant Edpuzzle assignments and scores on Star and CAASPP Math and Reading.

High-usage participants were significantly more likely to be on grade level on the CAASPP Reading and Math state standardized assessments.

- Usage of Edpuzzle varied widely, but was used the most by older students, grades 8 and 9, and in STEM subjects.
- Student performance on graded Edpuzzle assignments ranged between 60-70% on average across grades and subjects.

Correlation Strength Summary for Edpuzzle Quiz Performance

Grades	Star Reading & Math	CAASPP Reading & Math
3-5	↑ ↑	↑ ↑
6-7	↑ ↑	↑ ↑
8-9	-- ↑	↑ ↑



Large



Medium



Small

-- There were no ELA Edpuzzles completed in grades 8-9

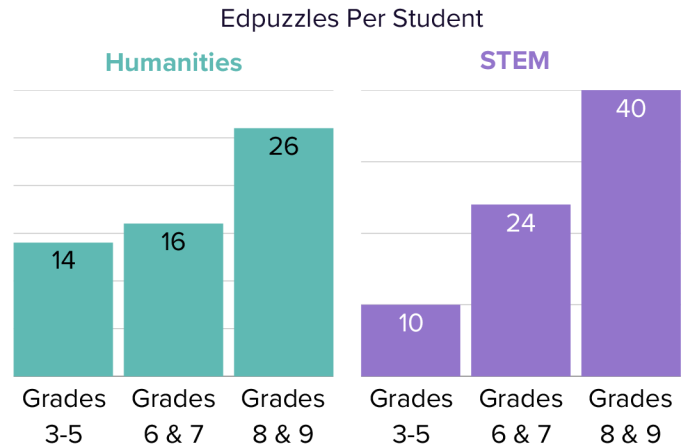
STUDENT USAGE DESCRIPTION

There was a wide variety of use across the grades in the district. There were substantially more students using Edpuzzle in the upper school grades in both subjects. The number of Edpuzzle assignments varied by grade and subject, with the most Edpuzzles being used by grades 8 and 9 in the STEM subjects.

Number of Assignments Completed by Grade Range

- Grades 3-5: 4,800 videos by 343 students
- Grades 6-7: 43,150 videos by 1,437 students
- Grades 8-9: 59,800 videos by 1,133 students

Edpuzzles by Student Average by Grade Range

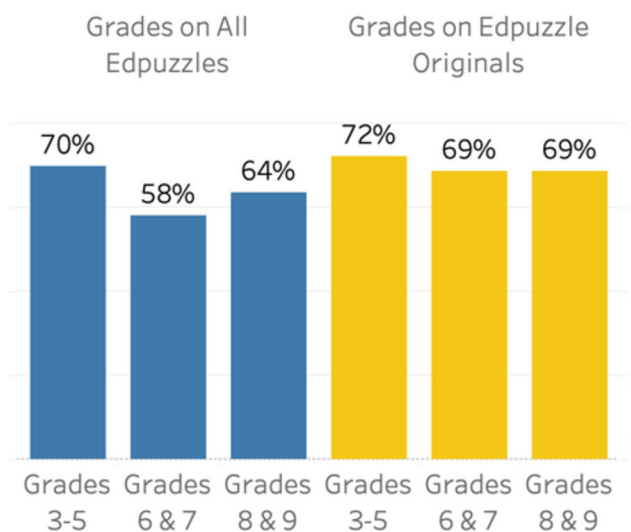


EDPUZZLE PERFORMANCE DESCRIPTION

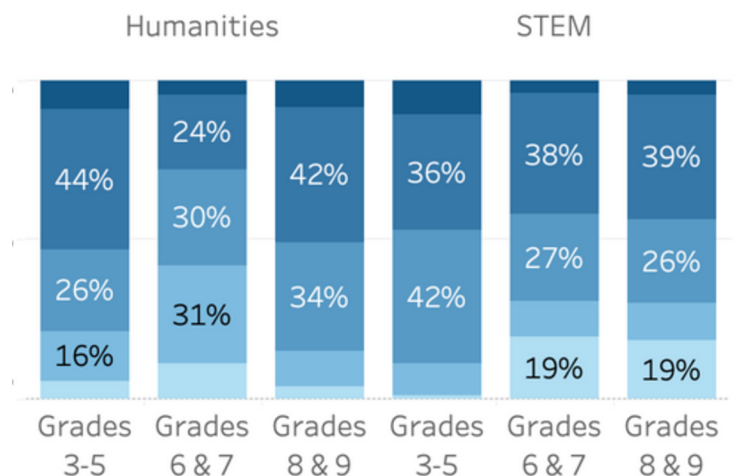
Edpuzzle videos created by educators varied in difficulty, with students scoring higher on average on Edpuzzle videos created by educators in grades 3-5 than in middle school and high school grades. However, the Edpuzzle Originals, created and produced by Edpuzzle, had consistent performance levels, with students scoring around 70% on average in each grade level (see graphs on left below). The consistency across grade levels for Edpuzzle Originals **indicates a strong instructional and formative assessment design** which could inform teachers of student progress across grade levels more accurately.

Looking at average scores does not tell the full story though. Students exhibited a wide range of scores in all Edpuzzles (see graphs on right below) and did not just get all questions correct. This implies that Edpuzzles include high-quality quizzes as they are challenging students just enough to understand where they might need more instruction. These results suggest that a student's score on an Edpuzzle question would be informative to an educator on that student's understanding of the material and the type of instruction they may need to advance onto more difficult or complex material.

Average Student Performance on Edpuzzles



% of Students in Edpuzzle Each Performance Range



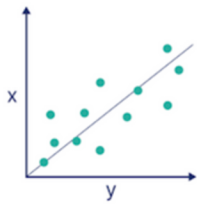
Performance Ranges



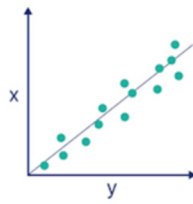
DEFINING STRENGTH OF CORRELATION

As a formative assessment, Edpuzzle performance can help educators understand what students have learned, and use the data to drive instruction. Performance on Edpuzzle quizzes was correlated and predictive of students future performance on end-of-year benchmark assessments and the California state test. Correlations are typically measured by the Pearson r coefficient and determines the strength of the relationship between two sets of scores. In educational technology research, less than .3 is considered a small correlation, while above .5 is considered large. Edpuzzle performance is defined by average accuracy on quizzes (0-100%) and Star and CAASPP performance uses the student's percentile rank in Spring 2023 (1st-99th percentile).

Small Positive Correlation



Large Positive Correlation



Correlation Strength



EDPUZZLE CORRELATION WITH STAR MATH AND READING

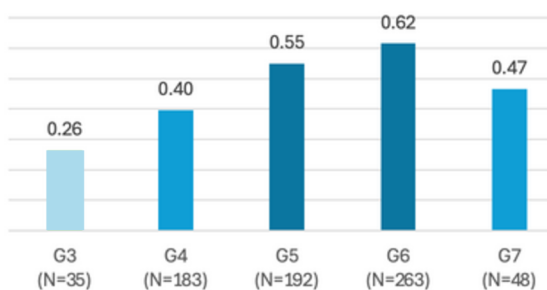


Key Takeaway: Edpuzzle assignment scores are correlated with Star Math and Reading assessment scores.

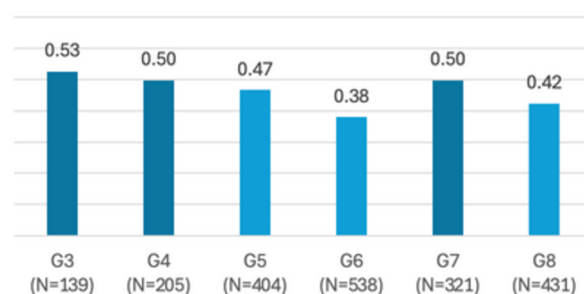
Star Math and Reading assessments are computer-adaptive assessments that assess K-12 students growth on literacy and math skills deemed appropriate for their grade level. 19 pairs of scores were compared across both assessments. 95% of these correlations were large or medium strength, indicating that students who had higher scores on Edpuzzle quizzes performed well on the Spring 2023 Star assessment. The relationships were particularly strong for grades 5 and 6 for the Edpuzzle Originals. For all math Edpuzzles, the scores showed a large effect in half of the grades measured.

Edpuzzle Grade Correlations with Star Math and Reading Percentile Rank

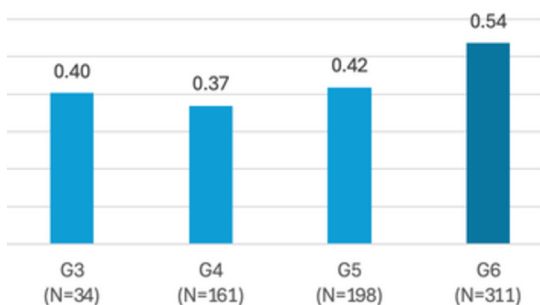
Star Math - STEM Edpuzzle Originals



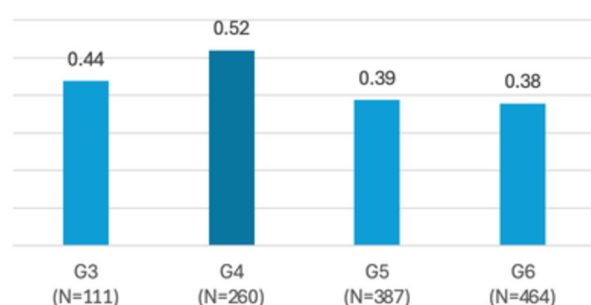
Star Math - STEM Edpuzzles



Star Reading - Humanities Edpuzzle Originals



Star Reading - Humanities Edpuzzles



CORRELATION WITH CAASPP READING & MATH



Key Takeaway: Trends suggest Edpuzzle assignment performance predicts CAASPP achievement levels.

In each grade, for both reading and math, students' grades on Edpuzzle assignments were higher for students who scored at higher achievement levels of CAASPP:

Level 1 = "have not met the achievement standard and need substantial improvement",

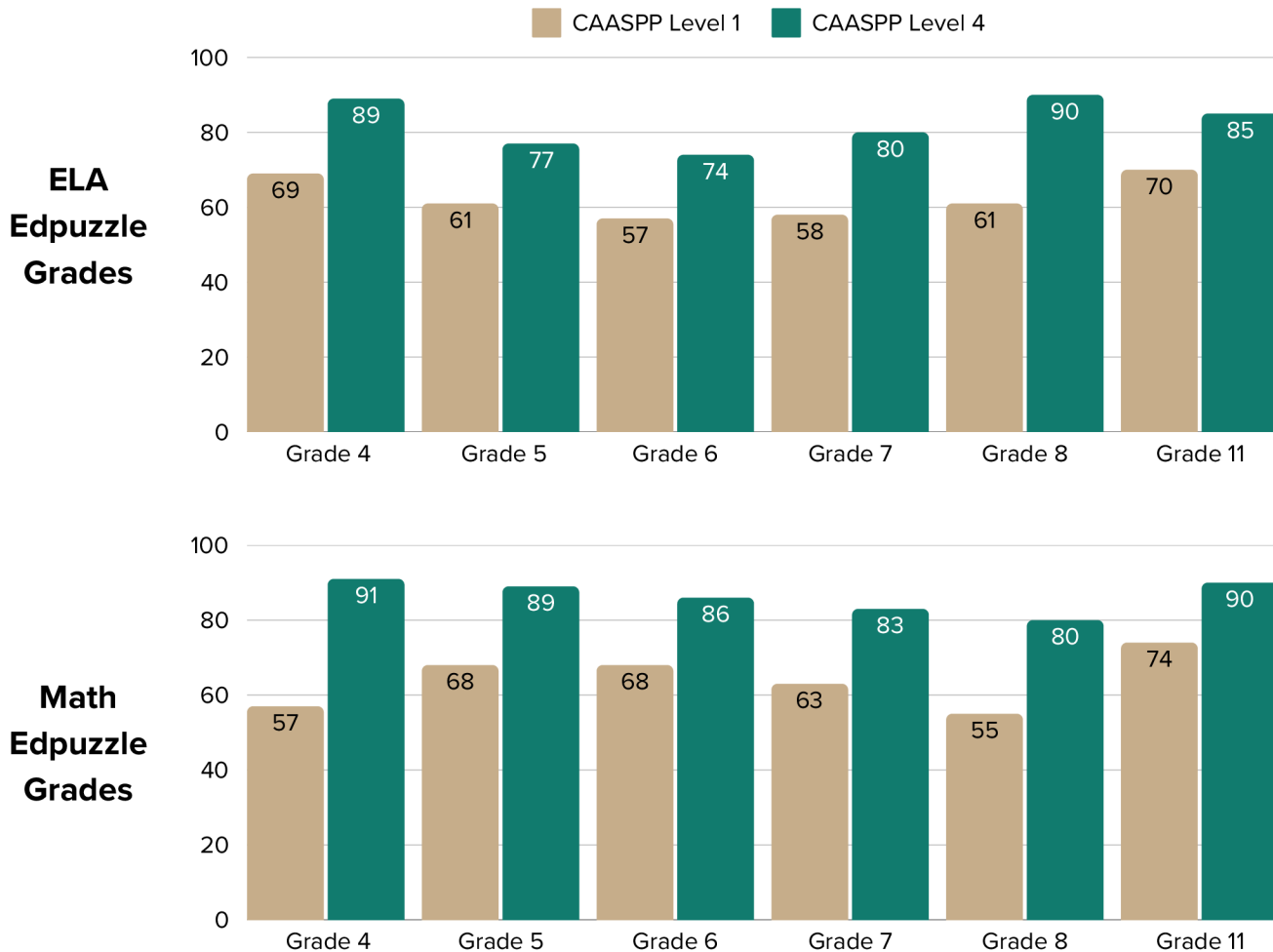
Level 2 = "nearly met standards with some improvement needed",

Level 3 = "meeting grade-level standards", and

Level 4 = "exceeding grade-level standards with advanced understanding."

On average, students who scored lower on Edpuzzle assignments were more likely to be Level 1 on CAASPP, and students scoring high on Edpuzzle assignments were more likely to be Level 4 on CAASPP. For example, in 8th grade ELA, students in CAASPP Level 1 had an Edpuzzle grade average 29 points lower than students in CAASPP Level 4. Similarly, in 8th grade math, students in CAASPP Level 1 had an Edpuzzle grade average 25 points lower than students in CAASPP Level 4.

Edpuzzle Average Grades by CAASPP Levels



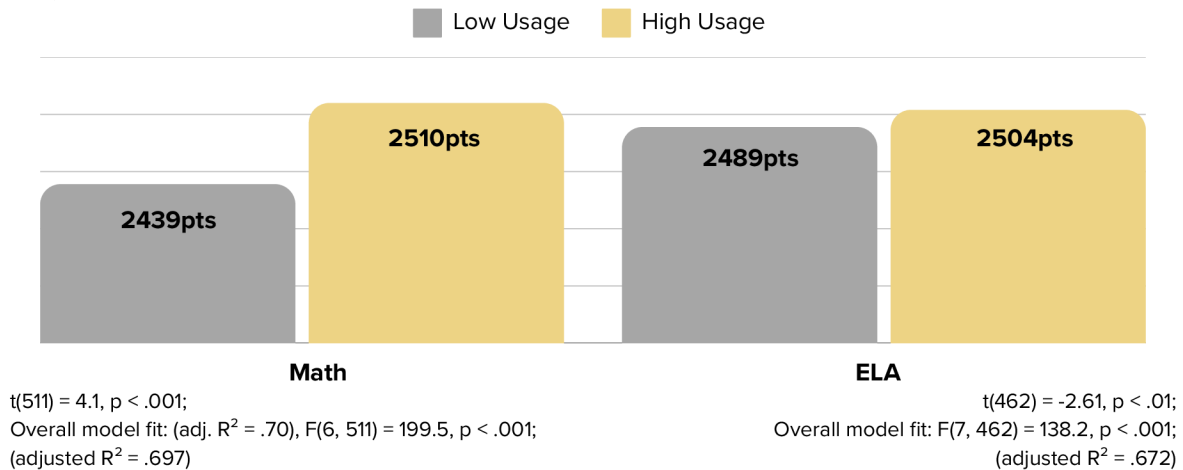
USAGE CORRELATIONS WITH CAASPP SCORES



Key Takeaway: High Edpuzzle usage is correlated with higher student achievement scores on CAASPP.

To determine whether the relationship between Edpuzzle usage and student achievement was statistically significant, LXD focused the analysis on comparing students with the highest and lowest levels of usage. Students were classified as "Low Usage" if their assignment completion fell at or below the 10th percentile (≤ 1 assignment for ELA, or ≤ 2 assignments for math), and as "High Usage" if they were at or above the 90th percentile (≥ 27 assignments for ELA and math).

While controlling for confounding variables (prior year scores, ELL status, gender, economic disadvantage status and ethnicity), Math and ELA displayed a statistical significance in the relationship between Edpuzzle usage and achievement. In Math, high-usage students scored 71 points higher than their low-usage peers on CAASPP. In ELA, the gap was 15 points ($p < .01$).



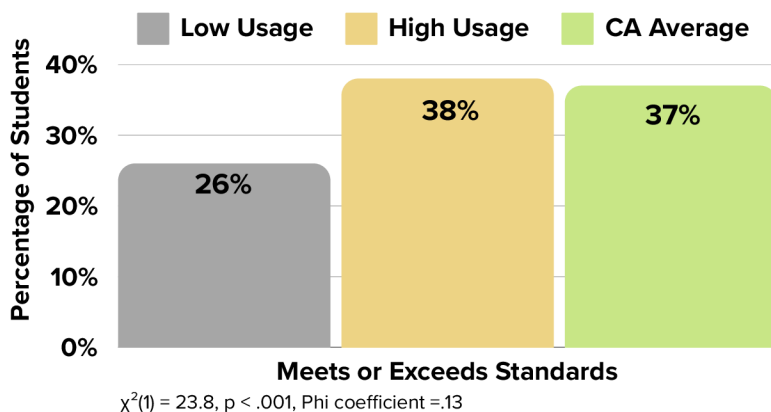
USAGE LEVEL PREDICTED CAASPP BENCHMARK OUTCOMES



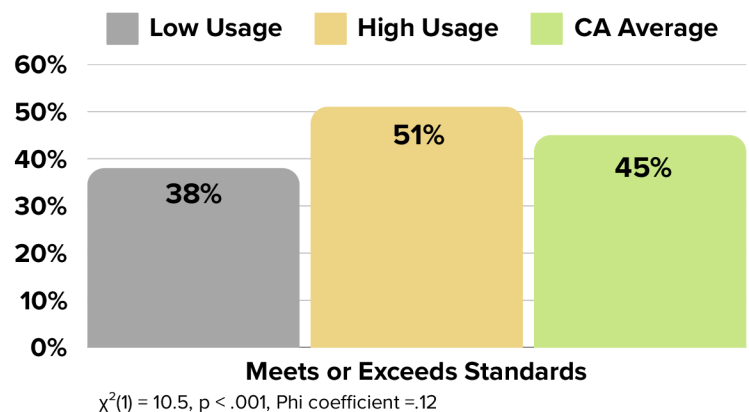
Key Takeaway: High Edpuzzle usage is correlated with meeting or exceeding standards on CAASPP.

To examine the relationship between Edpuzzle usage and CAASPP benchmark levels, LXD grouped CAASPP Levels 1 & 2 into "Does Not Meet Standards" and CAASPP Levels 3 & 4 into "Meets or Exceeds Standards" for χ^2 analysis. LXD found a statistically significant relationship between Edpuzzle usage and math achievement, meaning higher STEM Edpuzzle usage predicted higher likelihood of math proficiency. The χ^2 analysis showed that among high-usage students, 38% met or exceeded math standards compared to only 26% of low-usage students ($p < .001$). Via Zelma, in a similar χ^2 analysis of humanities usage, high-usage students were significantly more likely to be on grade level or above in CAASPP ELA (51%), compared to low-usage students (38%, $p < .001$). Additionally, the percentage of high usage students meeting/exceeding grade level was higher than the California average for both Math and ELA.

Math Benchmark Level by Edpuzzle Usage



ELA Benchmark Level by Edpuzzle Usage



EDPUZZLE CORRELATION CONTROLLING FOR STUDENT CHARACTERISTICS



Key Takeaway: Positive and significant correlations, after controlling for individual differences, contributes to the generalizability of these findings.

To meet the guidelines from the Every Student Succeeds Act, additional analyses were conducted to determine whether the use of Edpuzzle was associated with Star and CAASPP scores after controlling for key student characteristics including baseline scores and key demographic characteristics to reduce the risk of biased results. Selection bias, for example, could cause a sample not to be representative of a larger population, giving the results less plausibility to be seen in other samples. In these analyses, a student's Fall 2023 Star scores and/or Spring 2023 CAASPP scores were used as a covariate, along with key demographic variables of economic status, gender, ethnicity, and English language status.

All partial correlations for CAASPP Math and ELA were positive and statistically significant after accounting for the above covariates, ranging from .12-.31. Although the strength of the partial correlations was slightly lower than the simple correlations presented earlier in the report, these partial correlations were still significant after accounting for individual student differences that could have biased the results.

Notably, both subject areas had positive and significant findings for Star Math and ELA, and for CAASPP Math and ELA. The positive and significant partial correlation analysis findings provide evidence of the robustness of the Edpuzzle assessment, and potentially the generalizability of the findings to the general student population; not only these particular students in a single CA school district.

Grades with Significant Correlational Results After Accounting for Student Characteristics

	Star	CAASPP
Math	Grades 4, 5, 6, 7	Grades 4, 5, 6, 7, 8, 11*
ELA	Grade 5	Grades 4, 5, 6, 7, 8, 11*

* Spring 2023 was unavailable for Grade 11, so only demographics were used as covariates.

CONCLUSION

Based on the observed positive, significant relationships between Edpuzzle assignment performance and standardized test scores (Star and CAASPP Math and Reading), this study provides promising evidence for the validity of Edpuzzle's assessment tool as a predictor of student outcomes. Furthermore, implementation patterns revealed that students in classrooms with high Edpuzzle usage in relevant subject areas were significantly more likely to be proficient in math and ELA than students in low-usage classrooms; a promising indicator of program efficacy.

Notably, the highest usage for this study was found to be among older students (i.e., students in grades 8 and 9), especially in STEM subjects, with a wide range of student performance across grades and content areas. Although student performance on Edpuzzle assignments varied, performance was more consistent among students in classrooms that used Edpuzzle Originals. This finding indicates that the Edpuzzle Originals were more consistent, but both user-created and Edpuzzle original content were used with fidelity across grade level and subject area. The above findings indicate that teachers have used Edpuzzles to identify student needs and better target instruction to support student growth.

Future research could examine factors contributing to varied adoption rates across subjects and grade levels, while exploring how different implementation strategies might optimize student outcomes. These findings provide a foundation for understanding Edpuzzle's relationship with student achievement while highlighting opportunities for expanding and strengthening implementation practices.



LXD Research is an independent research firm that evaluates educational programs with ESSA-aligned methods.

Learn more at www.lxdresearch.com



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