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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

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

Understanding ESSA Evidence

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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

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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

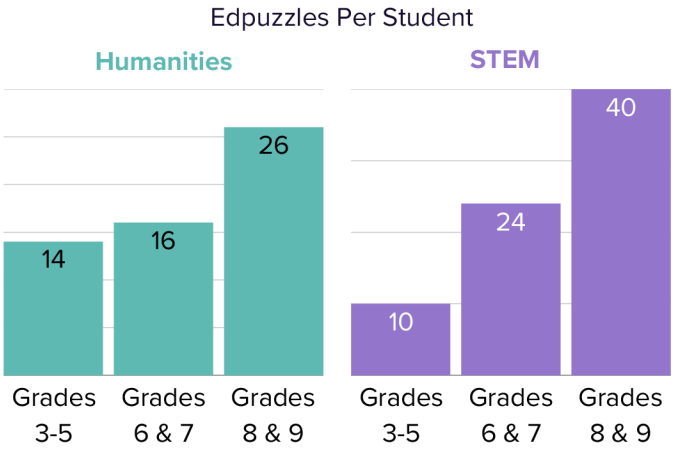
STUDENT USAGE DESCRIPTION

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

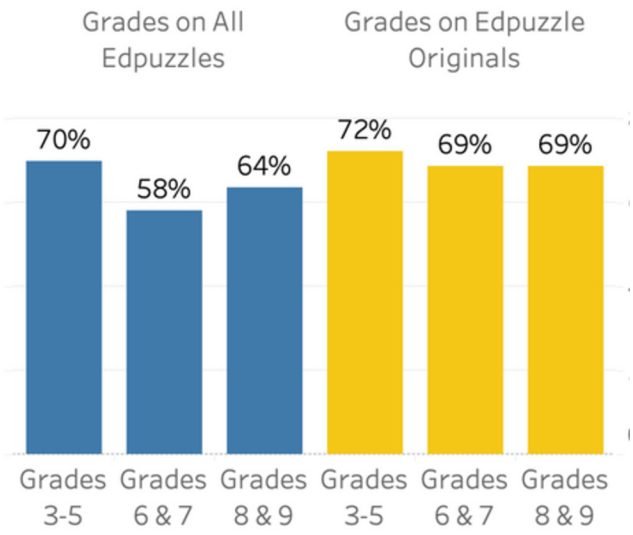


EDPUZZLE PERFORMANCE DESCRIPTION

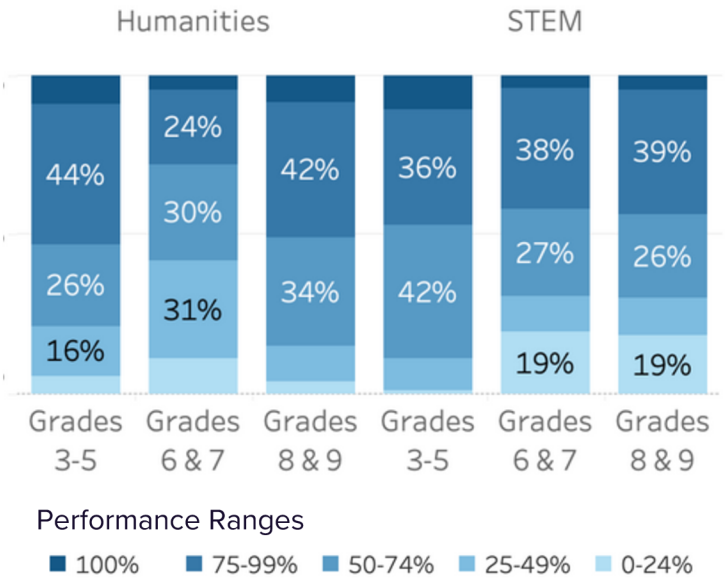
Edpuzzle videos created by educators varied in difficulty, with students scoring higher on average on Edpuzzle videos created by educators in grades 3-5 than in middle school and high school grades. However, the Edpuzzle Originals, created and produced by Edpuzzle, had consistent performance levels, 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



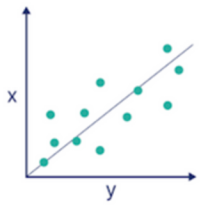
% of Students in Edpuzzle Each Performance Range



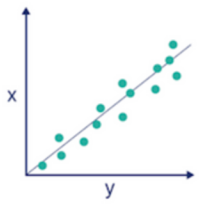
DEFINING STRENGTH OF CORRELATION

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

- **Large (> .50)**
- **Medium (.30 to .49)**
- **Small (< .30)**

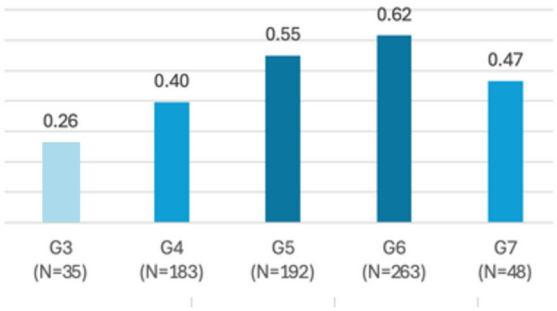
EDPUZZLE CORRELATION WITH STAR MATH AND READING

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

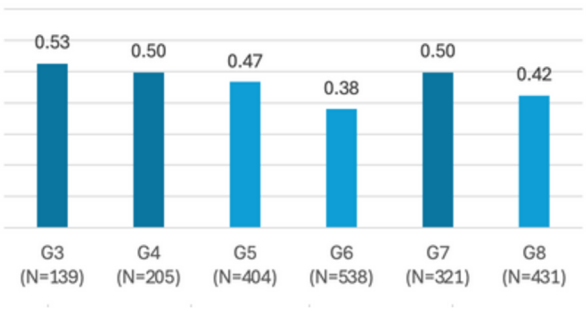
Star Math and Reading assessments are computer-adaptive assessments that assess K-12 students growth on literacy and math skills deemed appropriate for their grade level. 19 pairs of scores were compared across both assessments. 95% of these correlations were large or medium strength, indicating that 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

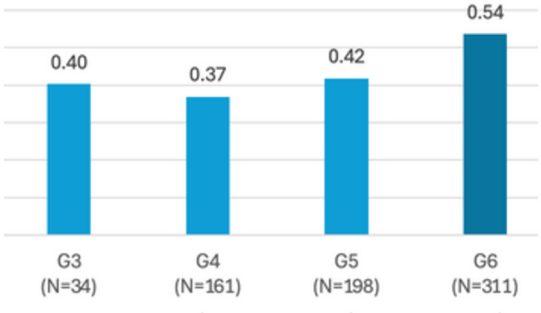
Star Math - STEM Edpuzzle Originals



Star Math - STEM Edpuzzles



Star Reading - Humanities Edpuzzle Originals



Star Reading - Humanities Edpuzzles

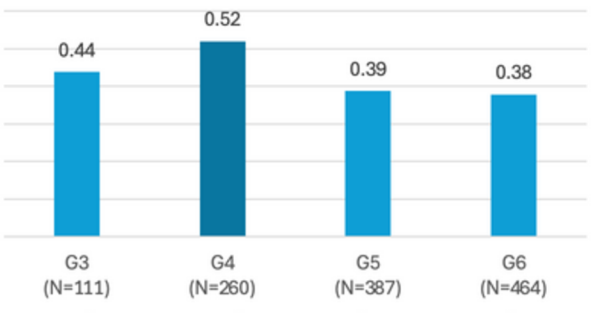


Image citation: Turney, S. (2024). In Pearson Correlation Coefficient (r) | Guide & Examples. Scribbr.

CORRELATION WITH CAASPP READING & MATH

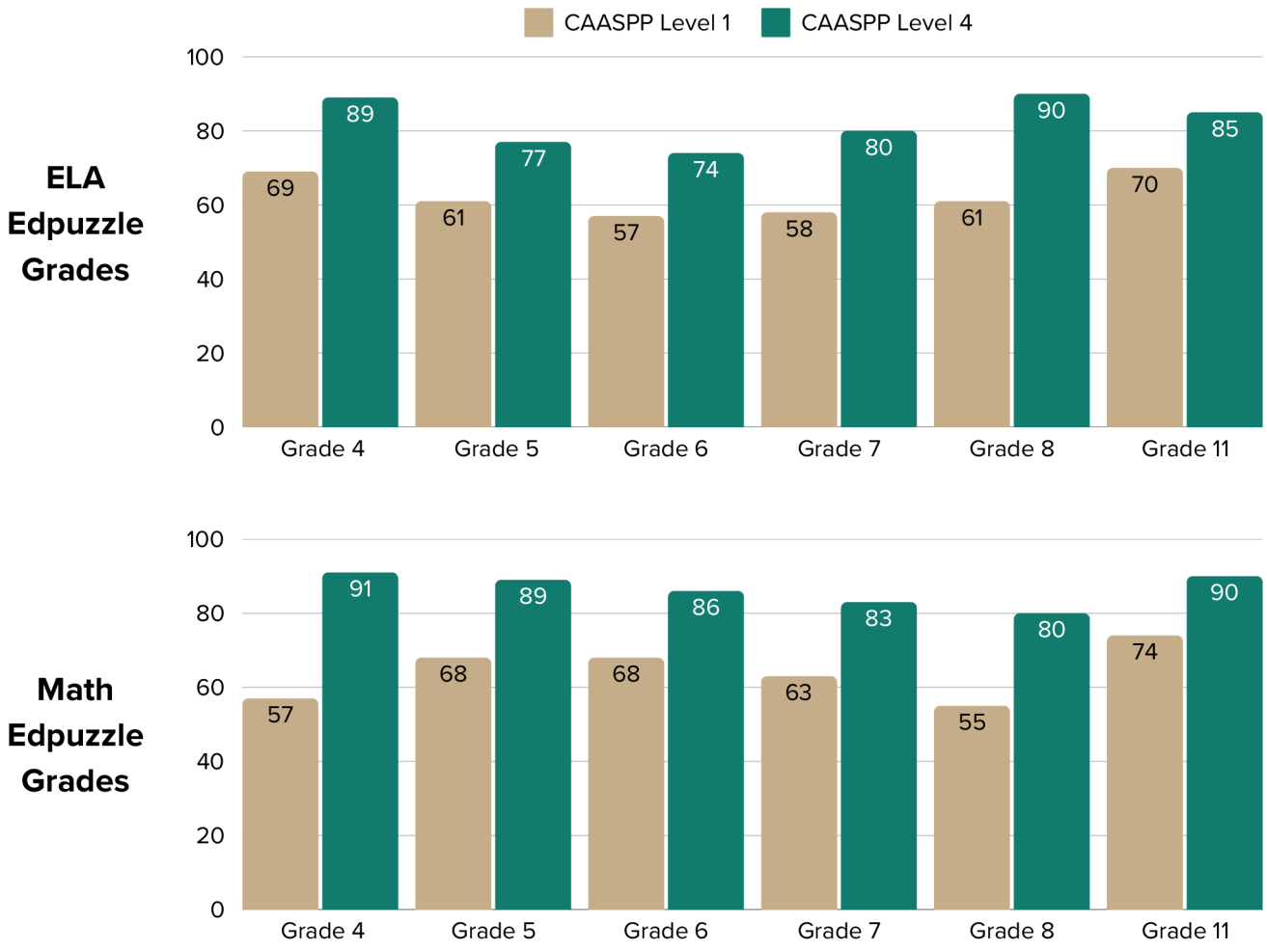
Key Takeaway: Trends suggest Edpuzzle assignment performance predicts CAASPP achievement levels.

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

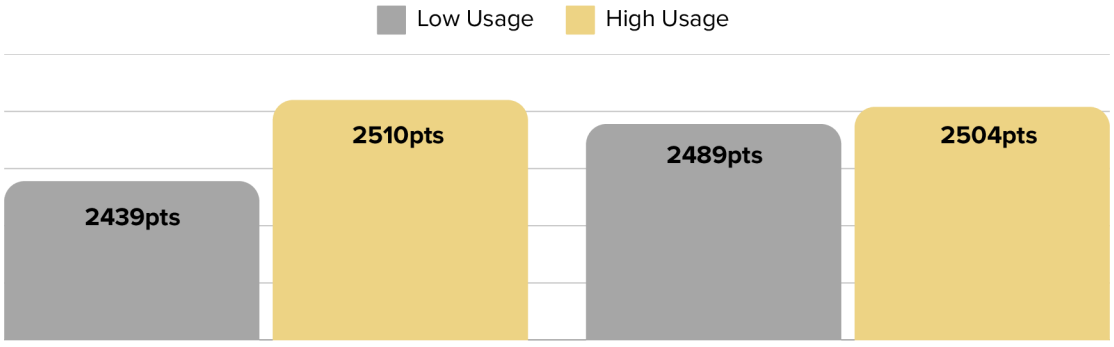


USAGE CORRELATIONS WITH CAASPP SCORES

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 ($p < .01$).



$t(511) = 4.1$, $p < .001$;
Overall model fit: (adj. $R^2 = .70$), $F(6, 511) = 199.5$, $p < .001$;
(adjusted $R^2 = .697$)

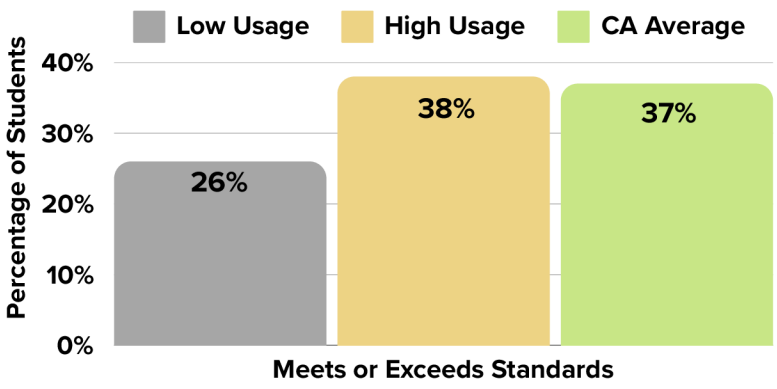
$t(462) = -2.61$, $p < .01$;
Overall model fit: $F(7, 462) = 138.2$, $p < .001$;
(adjusted $R^2 = .672$)

USAGE LEVEL PREDICTED CAASPP BENCHMARK OUTCOMES

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

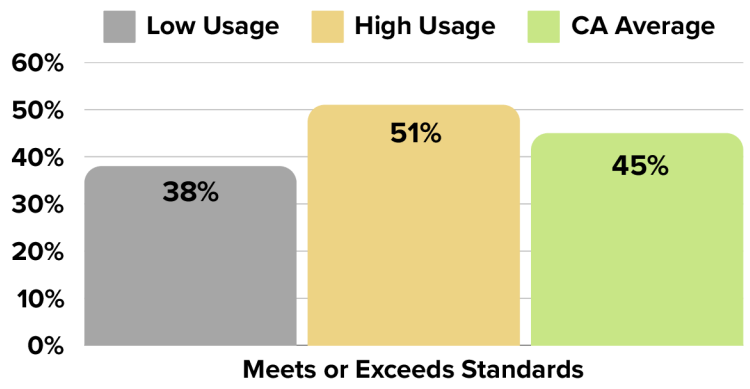
To examine the relationship between Edpuzzle usage and CAASPP benchmark levels, LXD grouped CAASPP Levels 1 & 2 into "Does Not Meet Standards" and CAASPP Levels 3 & 4 into "Meets or Exceeds Standards" for χ^2 analysis. LXD found a statistically significant relationship between Edpuzzle usage and math 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



$\chi^2(1) = 23.8$, $p < .001$, Phi coefficient =.13

ELA Benchmark Level by Edpuzzle Usage



$\chi^2(1) = 10.5$, $p < .001$, Phi coefficient =.12

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.

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Edpuzzle Efficacy Study:

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

By Rachel Schechter, Ph.D., Isabella Ilievski, Ed.M., Kenny Lam, Ed.M., and Paul Chase, Ph.D.
LXD Research at Charles River Media, Inc.

Abstract

This study evaluated the effectiveness of Edpuzzle, an interactive media learning tool, in enhancing student achievement in Math and English Language Arts (ELA) among grades 3–11 students in a participating California school district during the 2023–2024 academic year. Employing a retrospective design, the evaluation analyzed Edpuzzle usage data and assignment performance, and whether they predicted standardized outcomes including the CAASPP state test and Renaissance Star formative assessments. Results indicated that both teacher-created and Edpuzzle Original assignment grades were positively associated with higher performance on standardized tests, indicating the validity of the assessments, with the Edpuzzle Originals showing more consistent question difficulty levels across grade bands. Correlational analysis demonstrated that increased Edpuzzle usage predicted improved CAASPP and Star scores across grades. In addition, chi-squared tests indicated that students with high levels of Edpuzzle engagement were significantly more likely to meet or exceed grade-level proficiency compared to low-usage peers, even surpassing state averages. These findings suggest that Edpuzzle's integration of interactive video elements and embedded formative assessments can support personalized learning and inform targeted, data-driven instructional strategies. This study provides promising evidence of Edpuzzle's program efficacy and underscores the need for further research across diverse educational settings.

APA Cite: Schechter, R., Ilievski, I., Lam, K., & Chase, P. (2025). *Edpuzzle Efficacy Study: Correlational Study with Edpuzzle Performance on Star and CAASPP in Reading & Math, 2023-2024.* LXD Research.

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Introduction

The landscape of education has been rapidly evolving, with digital tools becoming increasingly prevalent in classrooms, especially since the COVID-19 pandemic (GovTech, 2022). This shift has created new opportunities for personalized and interactive learning experiences, particularly in the realm of video-based learning (VBL) and other media types. However, it has also raised questions about the efficacy of these digital tools in improving student outcomes. Research in educational technology (edtech) has highlighted several key principles on how to safely and effectively include edtech products in classrooms, including need for personalized learning experiences tailored to individual student needs (Spiro, 2001), value of immediate feedback in reinforcing learning (Grünke, 2017) and effectiveness of visual and auditory cues in enhancing comprehension (Huang et al., 2024).

Edpuzzle, an interactive media platform, aligns with these principles by offering, for example, tools to create engaging, personalized video lessons with embedded questions and feedback. While numerous studies have explored the impact of various edtech tools on student achievement, there is a growing body of evidence specifically supporting the effectiveness of Edpuzzle across different subject areas and grade levels.

Research has shown that video characteristics such as audio and visual cues, subject relevance, narrative speaking style, signaling, and optimal video length of 6-9 minutes predict impacts on learner attention, engagement, and outcomes (Brame, 2016). Embedding guided questions, interactive elements, and salient assignments throughout videos has also been shown to support positive learning outcomes (Vural, 2013).

Edpuzzle leverages these evidence-informed strategies by allowing educators to create or curate video content and insert guiding questions that check for learner comprehension and support active engagement with the lesson content (Johnson, 2023). The platform also enables teachers to record custom voice-overs with the goal of increasing understanding while reducing cognitive load, and to add or delete sections of each video to optimize lesson length (Hibbert, 2014).

Studies have demonstrated that using Edpuzzle can lead to improved student motivation, engagement, and academic performance. For instance, research has shown that Edpuzzle is particularly effective in supporting low-achieving students' development of self-regulated learning skills (Álvarez-Álvarez & Mischel, 2024). Additionally, the use of Edpuzzle in flipped classroom settings was associated with improvements in the optimal use of class time by reducing teacher explanation times (Álvarez-Álvarez & Mischel, 2024).

In collaboration with LXD Research, Edpuzzle engaged in a third-party assessment of its implementation within Vacaville Unified School District during the 2023-2024 academic year. This study aims to contribute to the growing body of evidence on the efficacy of digital learning tools

in K-12 education, focusing specifically on the impact of Edpuzzle usage on student achievement in Math and English Language Arts (ELA) across grades 3-11.

Product Description

Edpuzzle is an interactive media platform designed to enhance student engagement and learning outcomes across various subjects, including Math and ELA. The tool empowers educators to create or curate video content and embed questions, comments, and other interactive elements throughout the videos. Key features of Edpuzzle include video customization, which allows teachers to trim videos, add audio notes, and insert questions at specific points. The platform supports multiple types of interactive questioning, including multiple choice, open-ended, and time-stamped questions. **Edpuzzle Originals** are professionally-developed by Edpuzzle to include questions that are aligned with Common Core Standards.

Edpuzzle also provides progress tracking capabilities, enabling educators to monitor student viewing patterns and performance on embedded questions. The platform can be integrated with various learning management systems, enhancing its versatility in different educational settings. Edpuzzle is designed to support differentiated instruction and can be utilized in various learning environments, including flipped classrooms, remote learning, and traditional classroom settings. This flexibility makes it a valuable tool for educators seeking to personalize learning experiences and adapt to diverse student needs across different grade levels and subject areas.

Study Description

As part of their ongoing efforts to demonstrate the efficacy of Edpuzzle, the company has partnered with Learning Experience Design (LXD) Research, a third-party edtech research firm, to examine the relationship between Edpuzzle usage and student outcomes. This report focuses on students in grades 3-11 across Math and English Language Arts (ELA) subjects in the Vacaville Unified School District.

The research utilizes a lookback design, analyzing usage data from the 2023-2024 school year in relation to student achievement measures. By examining the association between Edpuzzle usage and student performance on standardized assessments like CAASPP and Star Renaissance, this study seeks to provide insights into the platform's effectiveness in supporting student learning across different grade levels and subject areas.

Research Questions

The research questions centered around whether Edpuzzle assignment performance and usage levels predicted standardized assessment scores at end-of-year.

1. Was there a significant correlation between student performance on Edpuzzle

assignments and EOY Standardized assessments (i.e., Star and CAASPP ELA & Math)?
2. Was there a significant relationship between performance and standardized assessments when controlling for baseline scores and demographic variables?
3. Did higher usage of STEM and Humanities Edpuzzles Originals predict higher scores in Math and ELA standardized assessments, respectively?

Method

The Method section briefly reviews the setting, participants, measures, and analysis methods of the current study.

Setting

This study was conducted within the Vacaville Unified School District, a diverse community located in Vacaville, California. The district serves approximately 12,000 K-12 students across 18 schools, encompassing a range of urban and suburban settings (Vacaville Unified School District, 2024). The district's mission emphasizes equity and innovation, aligning with the integration of technology like Edpuzzle to enhance student learning experiences. The district has a strong focus on using digital tools to support differentiated instruction and foster academic growth.

During the 2023-2024 academic year, Edpuzzle was implemented district-wide as part of an effort to explore how video-based learning could complement existing curricula in English Language Arts (ELA), history, math, and science.

Participants

The sample included all students in grades 3-11 in the district totalling 2,913 students. Participants in the current study were representative of the Vacaville USD, which is 35% White, 6% Black, 7% Asian, 41%, Hispanic/Latinx, and 11% Two or more races. Additionally, 31% of students are economically disadvantaged.

Measures

California Assessment of Student Performance and Progress (CAASPP)

The first measure included to evaluate the potential impact of Edpuzzle usage on student outcomes was the California Assessment of Student Performance and Progress (CAASPP); California's statewide summative assessment that measures student achievement in subjects including English Language Arts/Literacy (ELA) and mathematics. Key components include the Smarter Balanced Summative Assessments (SBAC) for ELA and mathematics, administered annually to students in grades 3-8 and 11 (California Department of Education, 2023). Additionally, CAASPP includes optional interim assessments that can be taken multiple times throughout the

year to track student progress. The primary goal of CAASPP is to enhance teaching and learning by measuring students' progress toward mastering the Common Core State Standards (CCSS) and preparing them for future academic success. CAASPP provides scaled scores and achievement levels (Standard Exceeded, Standard Met, Standard Nearly Met, Standard Not Met) for each subject area, offering a standardized measure of student performance across the state (California Department of Education, 2023).

Renaissance Star Math and Reading

In addition to the summative assessment, Renaissance Star Math and Reading are computer-adaptive formative assessments designed to measure students' academic skills and progress in mathematics and reading, respectively. The Star Reading test, typically used for students from first grade through high school, consists of 34 questions and takes about 20-30 minutes to complete (Renaissance Learning, n.d.). Star Reading evaluates skills such as identifying main ideas, making inferences, and understanding words in context (Renaissance Learning, 2024). Similarly, Star Math assesses a student's mathematical abilities across various concepts, including number sense, algebra, and geometry. Both assessments are computer-adaptive, with questions adjusting in difficulty based on student responses, and are usually administered three times a year to track progress (Renaissance Learning, 2024). The results are reported as Scaled Scores (SS), ranging from 0-1400, which help educators identify students' strengths and weaknesses, develop personalized instruction plans, and monitor academic growth throughout the school year (Renaissance Learning, 2024). These assessments provide a comprehensive view of student progress, achievement, and growth, allowing teachers to evaluate each student's performance and develop targeted instructional strategies.

Results

Data Analysis

Edpuzzle student usage was divided into Humanities assignments and STEM subjects assignments to determine whether they predicted ELA and math outcomes, respectively. Pearson r correlation coefficients were used to determine the strength of the relationship between two sets of scores. In educational technology research, less than .30 is considered a small correlation, while above .50 is considered large. Edpuzzle assignment performance was defined by average accuracy on Edpuzzle assignments (0-100%). LXD analyzed the relationship between Edpuzzle grades on these assignments and CAASPP and Star outcomes, after controlling for relevant demographic characteristics (e.g., Gender, FRL status, ethnicity) and baseline scores with partial correlations to determine the unique variance accounted for by Edpuzzle assignment scores. These partial correlations were conducted across grades, and separately for relevant grade ranges. Likewise, CAASPP and Star outcomes were assessed in relation to participants' level of Edpuzzle usage. Partial correlations were conducted to compare outcomes in scale scores, and

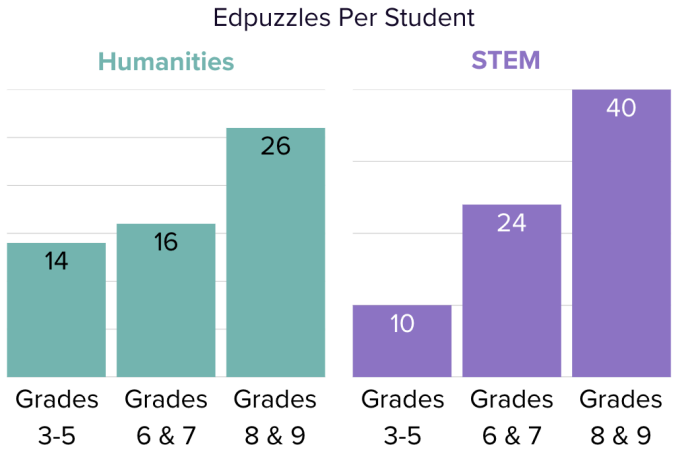
chi square tests were used to compare percentages of students who met or exceeded grade level standards. Star and CAASPP performance uses the student's percentile rank in Spring 2023 (1st-99th percentile).

Usage

Across the sample, there was a wide variety of use across the grades. Substantially more upper middle school and high school students used Edpuzzle in both the humanities and the STEM subjects. *Figure 1* highlights the range of average Edpuzzle usage across the grades bands with the highest use being in grades 8 and 9 for both humanities and STEM Edpuzzle assignments. Overall, the number of Edpuzzle assignments completed by grade range included:

- 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

Figure 1. Edpuzzle Assignments by Student Average by Grade Range



Performance

When investigating the performance on Edpuzzle assignments, LXD Research found that the regular Edpuzzle assignments, created by individual educators, varied in difficulty across grade bands. Students in grades 3-5 scored higher on average (70%) on these Edpuzzle assignments than grades 6-7 (58%) and grades 8-9 (64%). This finding identifies a slight inconsistency with the difficulty of teacher generated quizzes within Edpuzzles across the different grade bands meaning they might not be as accurate in determining student knowledge. However, average grades on Edpuzzle Original assignments, developed by Edpuzzle's education team, had more of a consistent difficulty level as students scored around 70% on average in each grade band (see Figure 2 below). This consistency across grade levels for Edpuzzle Original assignments indicates

a strong instructional and formative assessment design. This could inform teachers of student progress across grade levels more accurately compared to the regular Edpuzzle videos with educator created assignments.

LXD Research also analyzed the Edpuzzle assignment grades in more detail by focusing on the Edpuzzle performance ranges within each grade band and subject. Students exhibited a wide range of scores out of 100% in all Edpuzzle assignments, across grades 3-9 and in the Humanities and STEM subjects (see *Figure 3*). Students showing a performance range on Edpuzzle assignments indicated that the assignments have a well-balanced mix of question difficulty where students are responding correctly to most (but not all) questions. This finding is encouraging for educators who wish to use Edpuzzle assignments as an indicator of students' understanding of the content, potentially providing direction to a teacher seeking to support student progress.

Figure 2. Average Student Performance on Edpuzzles

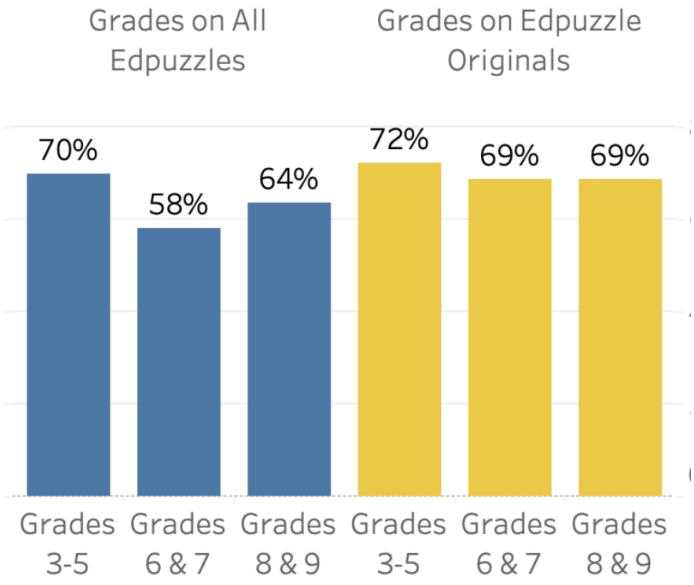
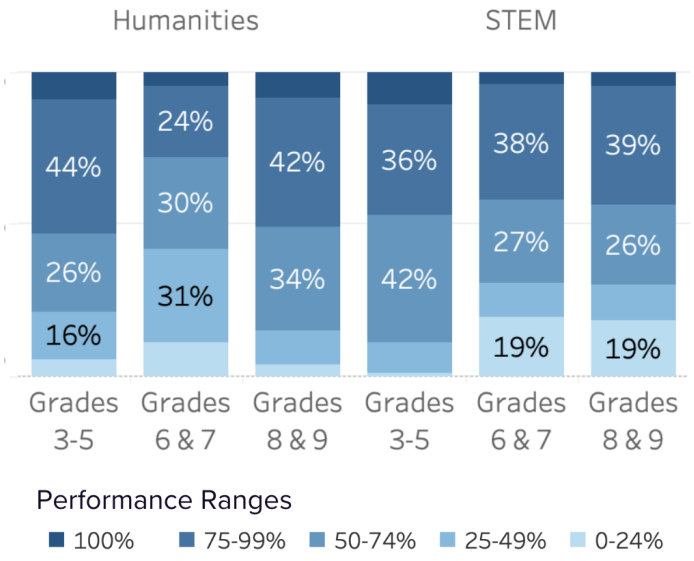


Figure 3. Percentage of Students in Edpuzzle Performance Ranges by Grade



Correlational Findings

Star Renaissance Reading

When investigating the relationship between Edpuzzle and Edpuzzle Original quiz scores and the Star Math and Reading assessments, nineteen pairs of scores were compared across the assessments. Overall, 95% of these correlations were large or medium strength, indicating that students who had higher scores on Edpuzzle and Edpuzzle Original quizzes performed well on the Spring 2023 Star assessments as shown in Figures 4a and 4b. The correlations were particularly large for grades 5 and 6 for the Edpuzzle Originals across the STEM and Humanities subjects.

Focusing on the regular Edpuzzle quizzes, the correlation between scores on STEM Edpuzzle quizzes and the Star Math percentile ranks was medium to large, particularly in grades 3, 4, and 7. Across Humanities Edpuzzle quizzes, medium to large correlations were found across grades 3-6 for Star Reading percentile ranks. These findings support the assertion that performance on Edpuzzle quizzes predicts end-of-year performance on Star Reading and Math assessments.

Figure 4a. Edpuzzle Grade Correlations with Star Math Percentile Rank

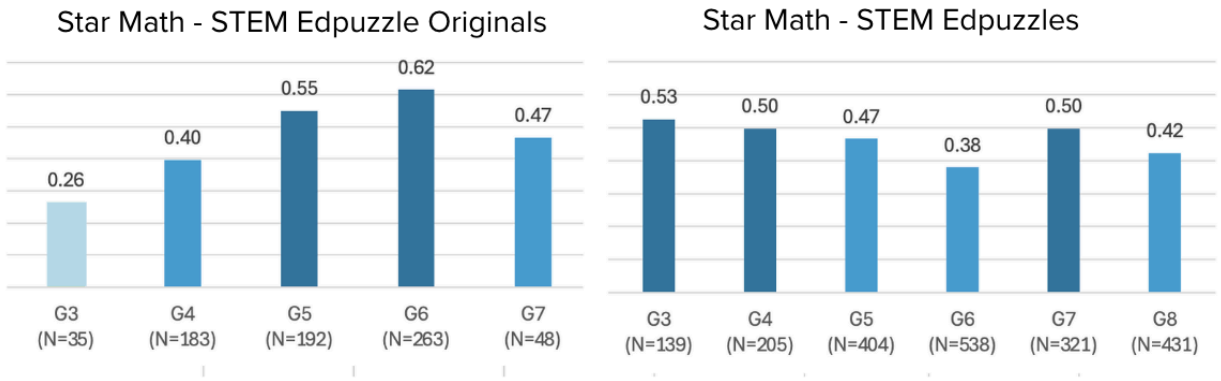
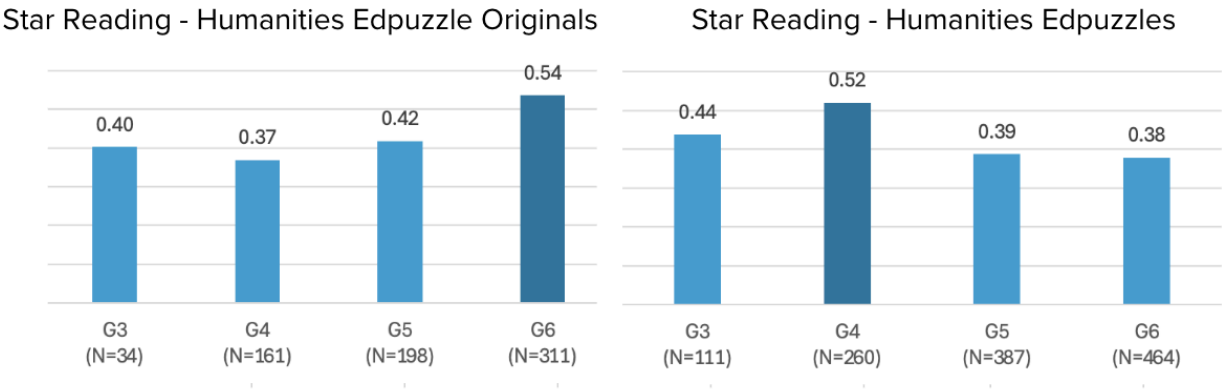


Figure 4b. Edpuzzle Grade Correlations with Star Reading Percentile Rank



CAASPP Correlations

CAASPP assigns achievement levels 1, 2, 3, or 4 to students based on their performance. Level 1 indicates that students have not met the achievement standard and needs substantial improvement. Level 2 indicates that a student nearly met the achievement standards but some improvement is needed. Level 3 indicates that a student is meeting grade-level achievement standards and Level 4 indicates that a student is exceeding grade-level standards with advanced understanding.

Edpuzzle Grade Correlations

In each grade, for both reading and math subjects, students' grades on Edpuzzle assignments were correlated with the CAASPP achievement levels. A students' higher grade on an Edpuzzle assignment was positively correlated with higher achievement levels of CAASPP. For example, in 8th grade ELA, students in CAASPP Level 1 (not meeting grade-level standards) had an Edpuzzle grade average of 61 points, whereas students in CAASPP Level 4 (exceeding grade-level

standards) had an Edpuzzle grade average of 90 points; a 29 point difference. Similarly, in 8th grade math, students in CAASPP Level 1 had an Edpuzzle grade average of 55; 25 points lower than students in CAASPP Level 4 with a grade average of 80 points. These consistent findings indicate that Edpuzzle assignment performance predicts CAASPP achievement levels. Figures 5a and 5b below illustrate the average grades on Edpuzzle assignments by CAASPP Level 1 and Level 4 for both ELA and math.

Figure 5a. Edpuzzle Average Grades by ELA CAASPP Level

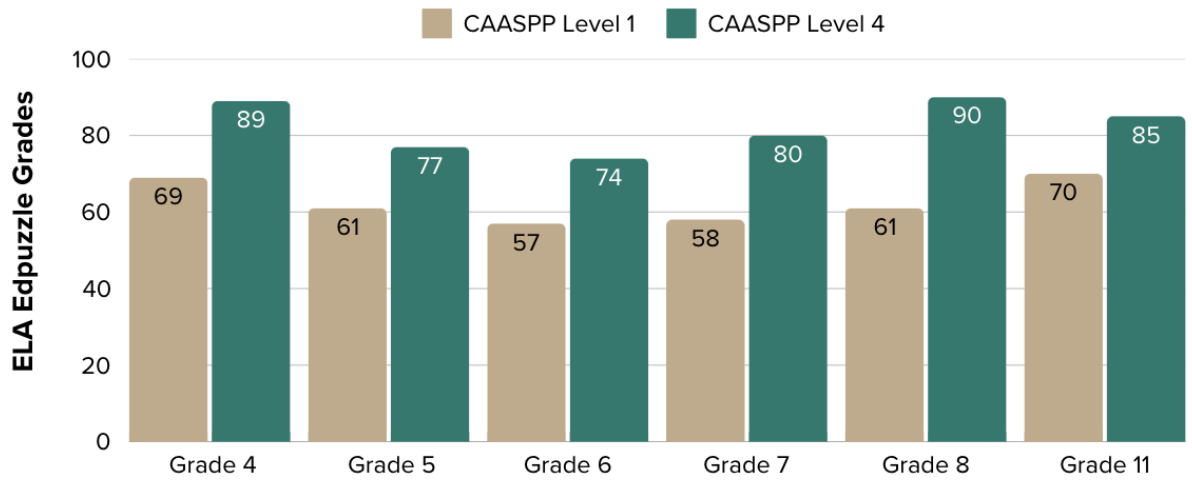
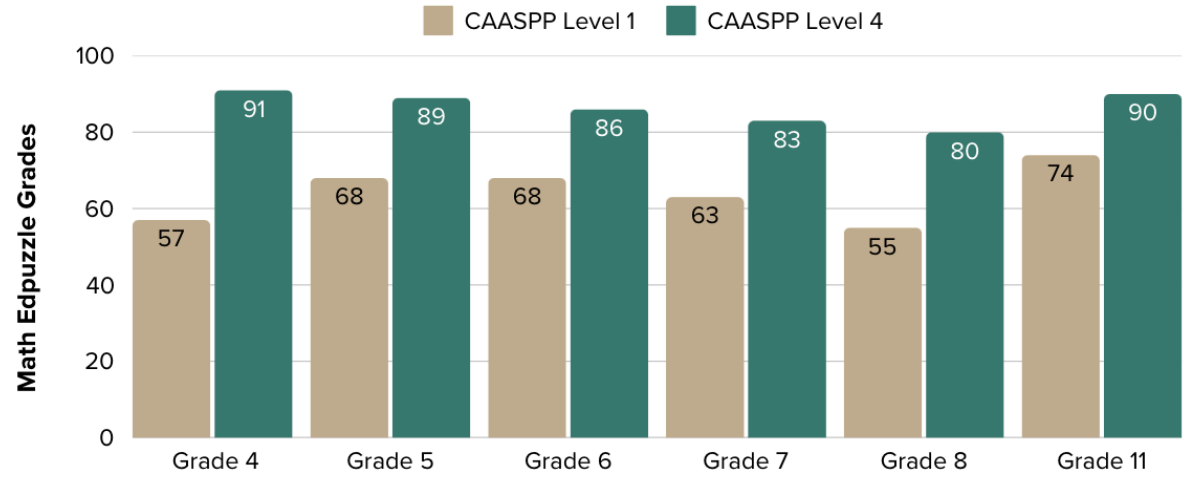


Figure 5b. Edpuzzle Average Grades by Math CAASPP Level

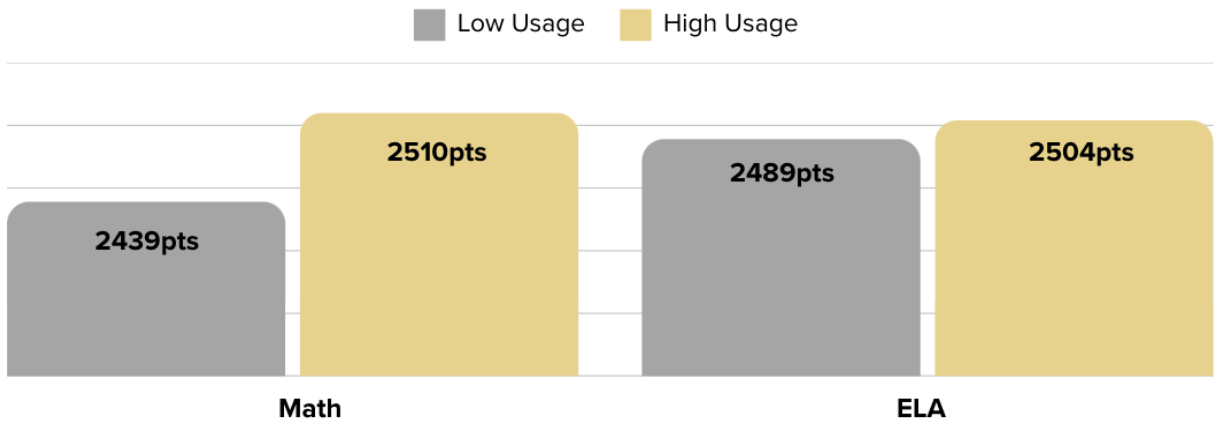


Edpuzzle Usage & CAASPP Score Correlations

LXD Research analyzed the relationship between Edpuzzle usage and student achievement. To determine whether this relationship was statistically significant, LXD focused the analysis on comparing students with the highest and lowest levels of Edpuzzle usage. LXD classified students as “Low Usage” if their Edpuzzle 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 (i.e., prior year scores, ELL status, gender, economic disadvantage status and ethnicity), the relationship between high Edpuzzle usage and high achievement in both Math and ELA scores was found to be statistically significant. On the CAASPP Math assessment, high-usage students scored 2510 points on average; 71 points higher than their low-usage peers (2439 points, $p < .001$). On the CAASPP ELA assessment, high-usage students scored 2504 points on average, 15 points higher than their low-usage peers (2489 points, ($p < .01$). These findings indicate that more Edpuzzle usage was associated with higher student achievement scores on CAASPP. For full details, please see Figure 6, below.

Figure 6. Edpuzzle Usage Correlations with CAASPP Scores



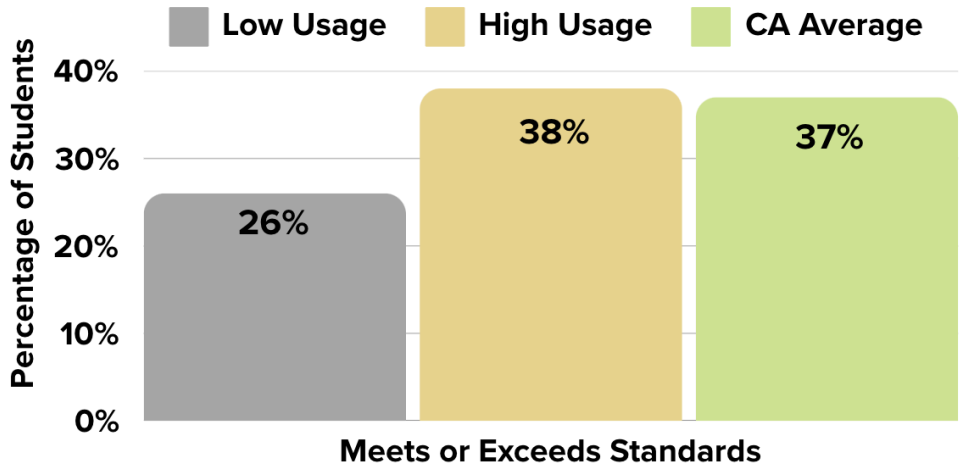
Math: $t(511) = 4.1$, $p < .001$; Overall model fit: (adj. $R^2 = .70$), $F(6, 511) = 199.5$, $p < .001$; (adjusted $R^2 = .697$)
ELA: $t(462) = -2.61$, $p < .01$; Overall model fit: $F(7, 462) = 138.2$, $p < .001$; (adjusted $R^2 = .672$)

Edpuzzle Usage & CAASPP Benchmark Comparisons

In addition to the above analysis of overall CAASPP scale scores, LXD examined the relationship between Edpuzzle usage and CAASPP benchmark levels. LXD grouped CAASPP Levels 1 and 2 into "Does Not Meet Standards" and CAASPP Levels 3 & 4 into "Meets or Exceeds Standards” for χ^2 analysis. LXD found a positive, statistically significant relationship between Edpuzzle usage and math achievement, in which higher STEM Edpuzzle usage predicted higher likelihood of math proficiency on CAASPP. The χ^2 analysis showed that among high Edpuzzle usage students, 38% met or exceeded math standards compared to only 26% of low-usage students ($p < .001$). Via

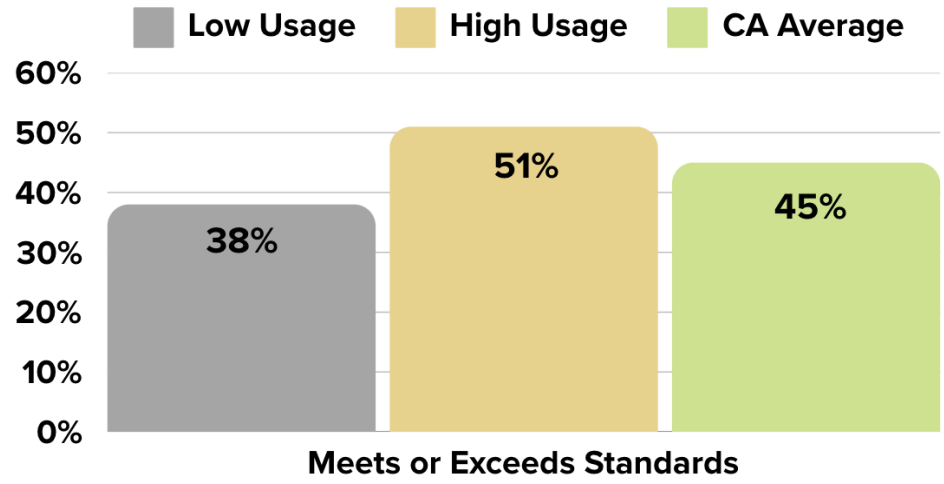
Zelma, in a similar χ^2 analysis of humanities usage, high Edpuzzle usage students were significantly more likely to be on grade level or above in CAASPP ELA (51%), compared to low-usage students (38%, $p < .001$; Zelma, 2025). Additionally, the percentage of high Edpuzzle usage students meeting or exceeding grade level was higher than the California state average for both Math and ELA. These findings indicate that more Edpuzzle usage predicts a higher benchmark level on CAASPP. For full details, please see Figures 7a and 7b, below.

Figure 7a. Math CAASPP Benchmark Level by Edpuzzle Usage



$\chi^2(1) = 23.8$, $p < .001$, Phi coefficient = .13, equivalent to Cohen's D of .26.

Figure 7b. ELA CAASPP Benchmark Level by Edpuzzle Usage



$\chi^2(1) = 10.5$, $p < .001$, Phi coefficient = .12, equivalent to Cohen's D of .24.

Controlling for Student Characteristics

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 Math and Reading scores after controlling for student characteristics to account for potential selection bias. In these analyses, a student's Fall 2023 Star scores or Spring 2023 CAASPP scores were used as a covariate (i.e., a variable that could influence an outcome), along with student demographic variables of economic status, gender, ethnicity, and English language status.

All partial correlations for CAASPP Math and ELA were positive and statistically significant, ranging from .12-.31. These findings indicate that after accounting for all relevant covariates, Edpuzzle usage still positively predicted CAASPP Math and ELA scores. Although the strength of the correlations were lower than the bivariate correlations presented earlier in this report, the partial correlations were still consistently positive and significant after accounting for individual differences among the students that could have influenced the results. Despite some differences in magnitude of effects across grade levels and subject areas, they were all "moving in the same direction." In basic terms, accounting for the samples' differences is important to understanding how these correlations might be generalized to the larger student population, not just these particular students in CA.

Table 1. Grades with Significant Correlational Results after Accounting for Student Characteristics

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

* Spring 2023 scores were unavailable for Grade 11, so only demographic covariates were used.

Discussion

This study investigated Edpuzzle usage across grades 3-11 in humanities and STEM subjects, and whether Edpuzzle assignment scores and usage levels predicted student achievement on Renaissance Star Math and Reading and the CAASPP Math and ELA assessment. The findings from this study that Edpuzzle assignment scores and usage predicted higher scores on standardized assessments are encouraging evidence of Edpuzzle's program efficacy; particularly due to the consistency of effects across grade levels and subject areas. LXD Research found a wide variety of Edpuzzle usage across the district with substantially more students in higher grades (8 and 9) using Edpuzzle assignments (in particular the STEM subjects). 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; however, both user-created and Edpuzzle Original content were used with fidelity across grade level and subject area in the district. The above findings suggest that teachers were able to use Edpuzzles to identify student needs and better target instruction to support student growth.

Regarding student achievement levels, LXD Research found positive correlations between Edpuzzle assignment scores and Star Math and Reading percentile ranks. The strongest correlations were among STEM Edpuzzle Original assignments and Star Math in grades 5 and 6, humanities Edpuzzle assignments and Star Reading in grade 6, regular STEM Edpuzzle assignments and Star Math in grades 3 and 4, and regular humanities Edpuzzle assignments and Star Reading in grade 4. Although these were the strongest, the correlations across grades were all positive, ranging from .26 (small) to .62 (large) correlations between relevant Edpuzzle assignments and Star Math and Reading.

Focusing on the California state test, LXD Research found in each grade, for both CAASPP ELA and Math, students who scored higher on Edpuzzle assignments scored at higher achievement levels on CAASPP. Therefore, a students' score on Edpuzzle assignments predicted their benchmark level on CAASPP. Additionally, when investigating high Edpuzzle usage compared to low Edpuzzle usage, students who used Edpuzzle more scored higher on the CAASPP Math and ELA assessments than students who used Edpuzzle less. Notably, high Edpuzzle usage students were significantly more likely to be considered on grade level or exceeding grade level on CAASPP Math (38%) and CAASPP ELA (51%), compared to their low-usage peers. Additionally, this percentage was also higher than the California state average for meeting or exceeding grade level in both Math and ELA. The collection of these promising results show the positive impact of using Edpuzzle as a supplementary resource across grades 3-11 and in the humanities and STEM subjects.

Limitations

This study only analyzed students using Edpuzzle in one school district across one school year. Educators in the district were allowed to determine how and how often they would use Edpuzzle. Although this implementation provided a more naturalistic framework for analyzing Edpuzzle usage, educators and their students were not randomly assigned to usage levels. In addition, the study did not include a randomly-assigned matched comparison group which would help to provide a neutral basis for comparison, but relied on within-group comparisons, and comparisons to state averages. Although the sample size was sufficient for full-group and sub-group analysis, future research could examine Edpuzzle usage across multiple sites to determine whether the program has differential effects across regions or demographic groups.

Conclusion and Next Steps

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 become proficient in math and ELA than students in low-usage classrooms; a promising indicator of program efficacy.

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. Because this study only included analysis of students using Edpuzzle, future research could examine the relative impact of Edpuzzle compared to students without access to Edpuzzle to enhance understanding of Edpuzzle’s unique impact on math and reading proficiency. These findings provide a foundation for understanding Edpuzzle's relationship with student achievement while highlighting opportunities for expanding and strengthening implementation practices.

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Appendix

List of Tables & Figures

Supplementary Materials

Figure A1. Edpuzzle Average Grades by Math CAASPP Levels 1-4

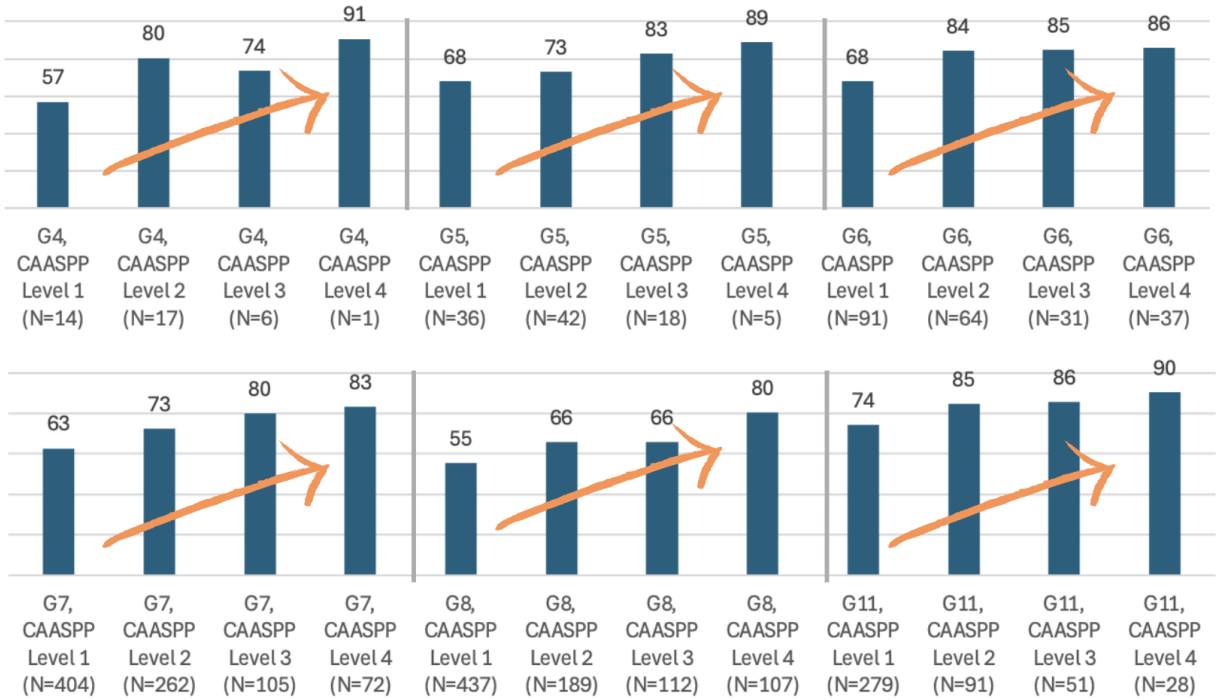
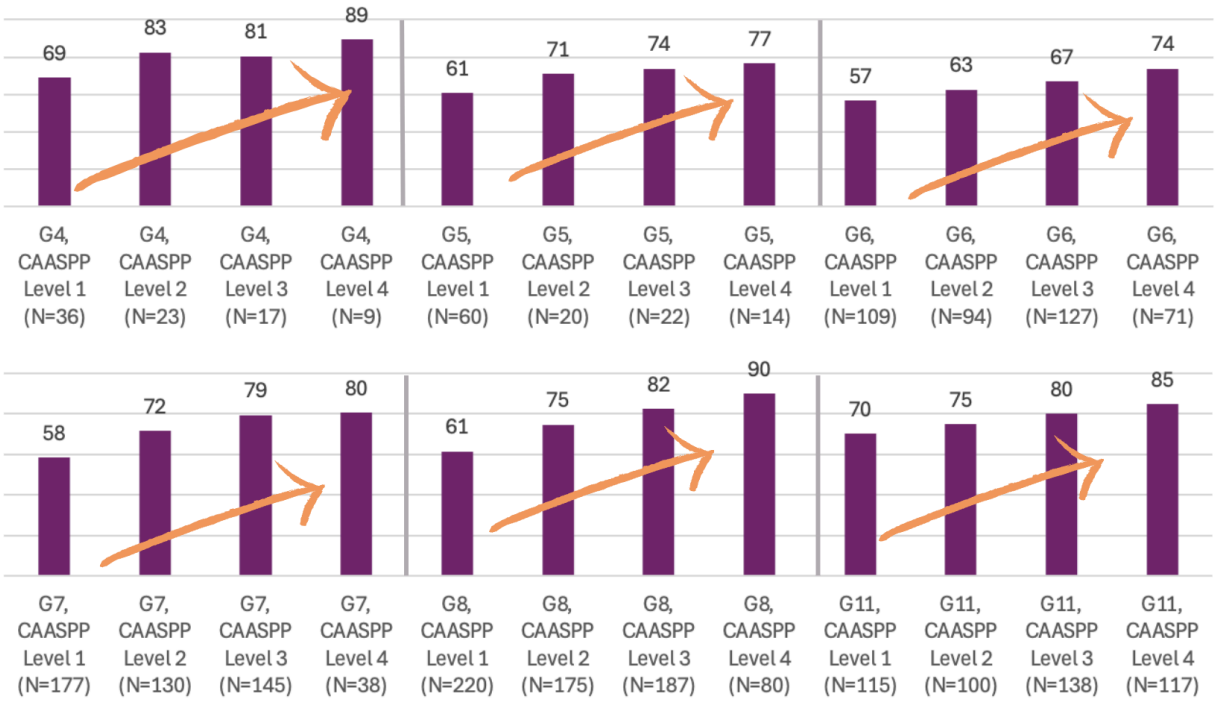


Figure A2. Edpuzzle Average Grades by ELA CAASPP Level 1-4



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