Kide Science Efficacy Report

Kindergarten, 2023-2024

Authors:

Rachel Schechter, Ph.D.
Madison Lee Mason, Ph.D.
Yerin Ko, B.A.
Sofia Jimenez, Ph.D.
and International Centre for EdTech Impact

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ESSA PROMISING III
LXD RESEARCH

PROMISING EVIDENCE

LXD Research Recognition for Kide Science

KiDE SCIENCE
POWERED BY ACCELERATE LEARNING

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 Evidence**." This recognition is based on its the relationship between higher usage and improved learning outcomes.

REVIEWED BY THE LXD RESEARCH EXPERT REVIEW PANEL

Rachel Schechter, Ph.D.
Founder of LXD Research

April 8, 2025

DATE

Understanding ESSA Evidence

LXD RESEARCH
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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 effectiveness, or demonstrates a rationale to be effective (Tier 4).

This product meets the requirements for Tier 3:

✓ In correlational design, students who used the program more often are compared to non users or less frequent users for comparison.

✓ Studies 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 use. This product meets the criteria for LXD Research's ESSA Tier 3 Evidence.

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

EFFICACY STUDY SUMMARY
KINDERGARTEN
2023–2024

PROGRAM DESCRIPTION

Kide Science is a STEAM education program offering an online library of play- and story-based lesson plans designed for children ages 3-8. The program implements inquiry-based learning within narrative contexts to develop scientific thinking, math, literacy, social-emotional skills, and critical thinking. Its pedagogical model is grounded in sociocultural learning theory and emphasizes imagination, creativity, and hands-on exploration.

STUDY DETAILS

Sample Description
- Location: Large district in Georgia
- Total students: 982 kindergartners
  - Treatment group: 603 students
  - Control group: 379 students
  - 44% White
  - 38% Asian
  - 10% Hispanic/Latino
  - 4% Black for African Amercian
  - 3% Two or more races
  - 46% female

Time Frame
- Fall 2023 - Spring 2024 school year

Methodology
- Study Design: Quasi-experimental design with treatment and control groups
- Implementation: Treatment teachers used Kide Science lessons throughout the school year with varying levels of intensity
- Assessment Measures: GKIDS assessments for Math and English Language Arts at beginning and end of year
- Statistical Analysis: Chi-squared tests to assess differences in student progress patterns between groups

STUDY SUMMARY

LXD Research evaluated the impact of Kide Science's play- and story-based STEAM program on kindergarten students' academic growth in math and literacy. This quasi-experimental study analyzed student progress throughout the 2023-2024 academic year, comparing outcomes between Kide classrooms and non-participating classrooms. Results showed that kindergarten students who entered school "Ready" and received Kide Science instruction demonstrated greater stability in math and literacy performance and improved comprehension skills compared to their peers in the control group.

The study included 982 kindergarten students from Forsyth County School District, Georgia, comparing Kide Science implementation to standard district instructional practices. Student outcomes were measured using the Georgia Kindergarten Inventory of Developing Skills (GKIDS) assessment at the beginning and end of the school year. Statistical analyses indicated that students in Kide classrooms, particularly those with teachers who used Kide more frequently, were significantly less likely to experience declines in key academic skills, suggesting a protective effect of frequent Kide use.

KEY FINDINGS

Kide Science was used as a supplemental program, with relatively few teachers using it on a weekly or biweekly basis. Students started the school year either "Ready" for kindergarten or below grade level and "Not Ready" for kindergarten. The impact of Kide varied by student readiness.

Students who began the year "Ready" and received Kide Science instruction showed:
- Greater improvement in Comprehension
- Less decline in Addition & Subtraction skills
- Less decline in Communication of Ideas

For students who began the year "Not Ready," exploratory analysis indicated potential benefits when teachers were "super users" with consistent, intensive implementation in ELA subdomains, particularly in Spelling.

Teachers reported that Kide lessons were engaging and effective at promoting student interest in science. They said:
- Students demonstrated increased use of academic language and vocabulary in everyday contexts
- Scheduling constraints were the primary implementation challenge

"Ready" students with teachers in the highest Kide usage group exhibited protection from declines seen in other student groups.

RESEARCH-BASED DESIGN

LXD Research Recognition for Kide Science

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 4 for "**Demonstrating a Rationale.**" This recognition is based on the Evidence-ready report by ICEI; WiKIT, which demonstrates that its research-based design is intended to enhance grade-level learning outcomes.

REVIEWED BY THE LXD RESEARCH EXPERT REVIEW PANEL

Rachel Schechter, Ph.D.
Founder of LXD Research

April 8, 2025

DATE

Kide Science Lookback Efficacy Study Report

Evaluating the role of inquiry-based science instruction in supporting English language arts and math development across varying levels of student readiness

Conducted by Rachel Schechter, Ph.D., Madison Lee Mason, Ph.D., Yerin Ko, Sofia Jimenez, Ph.D. LXD Research at Charles River Media Inc., in partnership with the International Centre for EdTech Impact; WiKIT

Abstract

Kide Science is a STEAM (science, technology, engineering, arts, and mathematics) program that offers an online library of play- and story-based lesson plans designed to support scientific thinking, math, literacy, social-emotional learning, and critical thinking in children ages 3-8. This study evaluated the impact of Kide Science on kindergarten students' academic growth in math and literacy over one academic year, comparing outcomes for students in classrooms that used Kide with those in non-participating classrooms. Student outcomes were analyzed based on initial readiness levels at the start of the school year. Among students who entered kindergarten classified as "Ready," Kide participation was associated with greater stability in math and literacy performance and improved reading comprehension skills. These benefits were most pronounced in classrooms with higher levels of Kide usage. For students who began the year "Not Ready," overall differences were not observed between Kide and non-Kide classrooms. Findings suggest that Kide Science may support academic development when implemented with consistency and intention, particularly for students with foundational readiness. With targeted implementation, the program may also benefit students requiring additional support in early learning.

Keywords: *School readiness; Play based learning; Early Science Education; Story-based lessons*

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Introduction

Students enter kindergarten with varying levels of readiness for school. Some students have had extensive exposure to structured learning environments and educational activities, while others have had limited opportunities to develop the foundational skills necessary for academic success (Skibbe et al., 2013). This variability in school readiness can impact students' ability to benefit from kindergarten instruction, potentially widening achievement gaps that persist throughout schooling.

Preparing young students for the learning opportunities they will encounter in elementary school is critical. When students develop social-emotional skills, executive function skills, and a foundational understanding of mathematics and literacy early on, they are better positioned to benefit from a more formal curriculum (Burchinal et al., 2022). High-quality educational programs that emphasize hands-on, engaging instruction can help students develop these crucial skills.

Kide Science is an early STEAM (science, technology, engineering, arts, and mathematics) content provider based in Finland. The pedagogical model of Kide Science is based on research by its founder, Dr. Jenni Vartiainen (Vartiainen, 2016; Vartiainen & Kumpulainen, 2020). Kide Science's approach implements play-based science education with a focus on inquiry-based learning and learning through narrative contexts. The program is grounded in sociocultural learning theory (Vygotsky 1978) that emphasizes integration and application of previous knowledge in new contexts.

This study measures the impact of Kide Science's approach on kindergarten students' academic outcomes, with particular attention to how students' initial school readiness affected their response to the intervention. Specifically, we address the following research questions:

1. What is the relationship between implementation of Kide Science lessons and kindergarten students' early mathematics and literacy progress?
2. How does the amount of Kide Science usage relate to kindergarten students' early mathematics and literacy progress?
3. Are there distinct patterns of progress for "super users" of Kide?
4. What specific elements of the Kide Science approach appear most beneficial for student learning?

Literature Review

Importance of School Readiness

School readiness encompasses the skills, knowledge, and attitudes necessary for success in school and for later learning and life. Research has consistently shown that students who enter kindergarten with stronger cognitive, social-emotional, and self-regulation skills achieve greater academic success throughout their education (Burchinal et al., 2022). The education students receive early on can significantly impact their readiness for their educational trajectory.

However, not all students have equal access to high-quality early learning experiences. Students from low-income families or with limited exposure to educational activities may enter elementary school at a disadvantage compared to their more advantaged peers (Skibbe et al., 2013). Effective early childhood interventions have the potential to narrow these gaps by providing all students with opportunities to develop essential skills.

STEAM Education in Early Learning Settings

STEAM education in US early learning settings has gained increasing recognition as a valuable approach to fostering young students' curiosity, creativity, and foundational skills in science, technology, engineering, arts, and mathematics (see e.g. Lathan, 2024) . The goal of integrating STEAM early in students' education is to create engaging, hands-on learning experiences that build skills and knowledge in a holistic, playful way that is developmentally appropriate for young learners and that align with the aspirations of future jobs.

Research suggests that early STEAM introduction can spark young students' natural curiosity (Kermani & Aldemir, 2015) and supports academic skills development (Aldemir & Kermani, 2017). As noted in the Kide Science evidence report that documented the alignment between published research and Kide Science core model (ICEI, 2024), "While STEAM is well received, particularly in early education (Johnston et al., 2022), it may pose additional pressure on teacher preparedness, as not all early educators feel confident teaching across a variety of science subjects". This highlights the importance of providing teachers with appropriate training and support when implementing STEAM curricula.

Play-Based Learning and Scientific Inquiry

Play is recognized as an appropriate and effective way of learning in early education, including science teaching (Kennedy & Tunnicliffe, 2022). Several theoretical frameworks support the importance of play for children's cognitive development, for example, Vygotsky's (1978) socio-cultural theory emphasized the pivotal role of play in creating imaginary situations. Kide Science is conceptualized around 'scientific play' (Vartiainen & Kumpulainen, 2020), where

imaginary science situations with narrative prompts for inquiry and various props are used to conduct scientific inquiry.

The playful inquiry approach emphasizes that science should not be separated from its contextual, cultural values, historical developments, and social norms (Vartiainen, 2016). Rather, it should be situated within a cultural-historical understanding of science education and multiliteracy theories.

This perspective aligns with inquiry-based learning, which is student-centered and active, as opposed to passive information reception, encouraging students to engage critically with the content. In a typical inquiry-based learning approach, students actively co-construct their learning through questioning, investigation, creating solutions, discussion, and reflection. Research suggests that this approach supports the development of critical thinking, problem-solving, and student agency (Samarapungavan et al., 2011; Peterson & French, 2008).

Early Mathematics Learning

Young students naturally develop some informal intuitions about mathematics through everyday experiences. Still, they also benefit from intentional activities designed to help them actively make sense of mathematical ideas and develop deeper understanding (Burchinal et al., 2022). Students who develop stronger early mathematical understandings in preschool are better prepared for the more formal mathematics instruction they will encounter in kindergarten.

While preschools often devote daily time to literacy instruction, mathematics instruction is typically less frequent and shorter, often only covering basic topics like counting and naming shapes (Chien et al., 2010; Burchinal et al., 2022). However, research indicates that extending mathematics instruction beyond these basic topics to include more advanced mathematical ideas like measurement, subitizing, and number relationships can benefit young students' mathematical development (Frye et al., 2013).

Early Literacy Development

Developing early literacy skills is critical for school readiness. Research in early childhood education suggests that play and storytelling create opportunities for children to engage in rich, interactive discourse, supporting vocabulary acquisition, syntax development, and expressive language skills (Weisberg et al., 2016). When science concepts are embedded within imaginative narratives and hands-on exploration, children are more likely to articulate their observations, ask questions, and explain their reasoning, which strengthens both oral and written communication (Toub et al., 2018). Additionally, inquiry science provides a way to help children make sense of new information, improving comprehension and explanatory language (Peterson & French, 2008). By encouraging dialogue, collaboration, and storytelling, a play-based science curriculum

fosters deeper conceptual understanding while simultaneously building foundational literacy skills essential for future academic success.

Early science exposure can be an effective way to expand students' vocabulary. Vocabulary development plays a pivotal role in students' later language and reading development and subsequent academic success (August et al., 2005). The vocabulary students develop early on forms the foundation for their future literacy skills. The key to boosting vocabulary development is repeated exposure and opportunities to use new words in a variety of contexts and conversations around themes interesting to students.

The Kide Science Approach

Kide Science combines several evidence-based approaches to early education. Its pedagogical model implements play-based science education with a focus on inquiry-based learning and learning through narrative contexts. The program is grounded in sociocultural learning theory (Vygotsky, 1978), which emphasizes the integration and application of previous knowledge in new contexts.

The core pedagogical features of Kide Science include inquiry-based learning, learning through play, and contextualization in a narrative (including role-play) (ICEI, 2024). Both play and narrative contexts frame learning by emphasizing imagination and creativity. The activities focus on science process skills that emerge during three core phases of the inquiry: orientation, investigation, and conclusion.

The potential of narrative and storytelling in science education has been widely acknowledged (Mutonyi, 2016). Storytelling is one of the central ways we conceptualize our world (Bruner, 1990, 1996). In science teaching, stories are a powerful pedagogical tool for making complex scientific concepts more accessible, engaging, and memorable for students. The scientific play in Kide Science is embedded in the context of a story that prompts and triggers scientific exploration. By framing scientific knowledge as interconnected stories, Kide Science helps students see science as an exciting, human-driven pursuit of understanding rather than a distant or impersonal subject.

Previous qualitative research on Kide Science has shown promising results. Lee and Vartiainen (2021) reported high levels of behavioral, cognitive, and emotional engagement among young students participating in Kide Science activities. Vartiainen and Kumpulainen (2020b) found that students showed they could participate in science process skills, link topics to their previous experiences and knowledge, adapt results to new contexts, and suggest elaborations.

While previous research has primarily focused on Finnish children, the present study aims to build on this work by examining the quantitative impact of Kide Science on U.S. kindergarten

students' academic outcomes, with particular attention to how students' initial school readiness affected their response to the intervention.

Methods

Sample Description

This study includes usage data from teachers and assessment data from kindergarten students in Forsyth County School District, Georgia, during the 2023-2024 academic year. The treatment group consisted of students whose classroom teachers utilized the Kide Science program that year. The control group included students whose teachers did not access or use Kide at any point during the school year. Approximately 60% of all kindergarten students in the district were in classrooms where Kide was used, resulting in a total sample of 982 students - 603 in the treatment group and 379 in the control group.

Demographic information was available for all participating students. Among these students, 44% identified as White, 38% as Asian, 10% as Hispanic/Latino, 4% as Black or African American, 3% as Two or more races, and 1% as American Indian or Alaska Native. The treatment and control groups were relatively balanced in terms of racial/ethnic distribution, except for a higher percentage of White students in the treatment group compared to the control group (7.6% difference). The gender distribution of the sample included 529 male students (54%) and 453 female students (46%), with a relatively balanced distribution between treatment and control groups.

The study examined educators who used the Kide program and educators who did not use the program during the 2023-2024 academic year, allowing for comparative analysis. Educator survey data was collected in December 2024 and January 2025 from a small group of teachers who used Kide, reflecting on their previous experience.

Implementation Description

The Kide science program was implemented across participating schools in Forsyth County School District during the 2023-2024 academic year. Forsyth County is located within the Atlanta metropolitan area and serves over 50,000 students and 8,000 employers. Out of 180 school districts, Forsyth County is the fifth largest district in Georgia, with 42 public schools. It was recommended that Kindergarten teachers in the treatment group use Kide once or twice a week.

Assessment Descriptions

Student academic performance was evaluated using the i-Ready Assessment and the Georgia Kindergarten Inventory of Developing Skills (GKIDS) Readiness Check Framework, developed by the Georgia Department of Education (GaDOE). The focus of this report is on the latter assessment as the i-Ready scores were not available at the beginning of the studied school year, and thus cannot demonstrate student growth.

i-Ready is a computer adaptive screener that provides a "temperature check" on students' reading and math skills. Designed to be as brief as possible, it uses predictive analytics to determine the number of questions for each student and only selects items that contribute to accurate score calculation. Student scores are compared to a normed sample of pre-pandemic students and categorized into benchmarks.

The GKIDS Readiness Check is aligned to the Georgia Early Learning and Development Standards (GELDS), a set of high-quality, research-based early learning standards for students that is used to assess developmental skills critical for kindergarten students, including social-emotional development, cognitive skills, and academic readiness. It is implemented during the first six weeks of kindergarten and uses both direct assessment methods (structured performance tasks with detailed procedures) and indirect assessment methods (observational). All activities are developmentally appropriate and measure kindergarteners' entry-level readiness skills across three key domains: Foundations of School Success, English Language Arts (ELA), and Mathematics, however, only the last two were a focus of this study.

The beginning-of-year assessment in Fall 2023 focused on broad Math and ELA domain categories with five performance levels: Not Assessed, Not Yet Demonstrated, Emerging, Developing, and Demonstrating. These levels offered insight into the foundational skills students possessed when entering kindergarten.

At the end of the year, in Spring 2024, the assessment focused on specific subdomains within Math and ELA. Math was assessed in four subdomains: counting and cardinality, count sequence, written numerals and comparison of quantities, and addition and subtraction. ELA was broken down into six subdomains: phonemic awareness, high-frequency words, comprehension, conventions of writing, spelling, and communication of ideas. For these subdomains, performance levels were expanded to include Beginning, Proficient, and Exceeding, providing more specific measures of students' academic growth over the year.

This data not only tracks students' individual growth but also provides teachers and families additional information to adjust instruction, interventions, and support that best prepares students for success in kindergarten and after. The assessment aligns with the state's educational goals to ensure students are on track with the state standards.

Table 1. Math assessment data available at each time point

Math Fall 2023 (BOY)	Math Spring 2024 (EOY)	Math Fall 2024
1 main domain ● MATH	**4 subdomains** ● Counting and Cardinality ● Count Sequence ● Written Numerals and Comparison of Quantities ● Addition and Subtraction	**i-Ready Math percentile scores**

Table 2. ELA assessment data available at each time point. Additionally, students' Fall 2024 i-Ready percentile scores for both Math and ELA provided further insight on their progress based on grade-level expectations.

ELA Fall 2023 (BOY)	ELA Spring 2024 (EOY)	ELA Fall 2024
1 main domain ● ELA	**6 subdomains** ● Phonemic Awareness ● High Frequency Words ● Comprehension ● Conventions of Writing ● Spelling ● Communication of Ideas	**i-Ready Reading percentile scores**

Due to the GKIDS assessment data being categorical, student performance was analyzed using several metrics. For the analysis, students were initially categorized into two groups based on their Fall 2023 assessment results, establishing readiness levels prior to program implementation. "Demonstrating" students placed into "Ready" groups and all other students in "Not Ready" groups.

Table 3. Number of students Math Ready vs. Not Ready in Treatment vs. Control in Fall 2023

Condition	Ready	Not Ready
Treatment	402	201
Control	212	167

Table 4. Number of students ELA Ready vs. Not Ready in Treatment vs. Control in Fall 2023

Condition	Ready	Not Ready
Treatment	351	252
Control	210	169

Based on students' Fall 23 Readiness status and Spring 24 subdomain performance level, student progress was classified into three trajectories: Maintain, Improve, or Decline. A student was categorized as "Maintain" if their Fall and Spring scores stayed the same, "Improve" if subdomain performance level in the Spring was better than their domain level category in the Fall, and "Decline" if subdomain performance level in the Spring decreased in comparison to domain level category in the Fall. For example, a student classified as "Not Yet Demonstrating" would be categorized as "Improve" if, in the Spring, they were "Emerging." This classification system was developed to accommodate the categorical structure of the GKIDS data and to provide meaningful metrics for analyzing student growth across the academic year.

Teachers were grouped into three usage categories based on the number of Kide lesson views recorded in their accounts: No Usage, Low Usage, and High Usage. The No Usage group consisted of teachers who did not access any Kide lessons and served as the control group. A median split was applied to determine usage intensity among teachers who used Kide. Those with four or fewer lesson views were classified as Low Usage, while those with more than four views were classified as High Usage. The survey revealed that teachers may have considered Kide lessons as a special occasion, rather than a bi-weekly or weekly experience, which is reflected in these groupings.

Table 5. Kide Usage Data

Usage Group	Number of Students	Number of Lessons Viewed
No Usage	379	Did not access
Low Usage (60%)	364	1-4
High Usage (40%)	239	5+

Study Results

Summary of findings

A survey of teachers helped contextualize the Kide usage results in Forsyth through the 23-24 school year. Teachers appreciated the playful learning opportunities that Kide provided along with the increased student engagement, but found that it was difficult to schedule Kide lessons. This is echoed in the qualitative findings where usage was much lower than the recommended frequency of at least once a week.

For the quantitative analysis both iReady and GKIDS scores were analyzed for student Math and ELA scores. As an initial comparison, iReady Math and ELA scores from Fall 2024 were analyzed to assess differences between Kide and non-Kide students following the 23-24 school year. These analyses revealed no significant impact of Kide on iReady Math, $t(795) = 1.19$, $p = .23$, or iReady ELA, $t(819) = 0.62$, $p = .54$. Given these findings, further analyses focused on student progress in GKIDS Math and GKIDS ELA to better understand the role of Kide in academic development throughout the 23-24 school year.

Overall, findings suggest that for students who began the year classified as Ready, Kide implementation played a role in stabilizing and enhancing academic progress. In math, Ready students in Kide classrooms were less likely to experience declines in Addition & Subtraction skills. In ELA, Kide usage was associated with gains in Comprehension and a protective effect against declines in Communication of Ideas. Furthermore, higher Kide usage appeared to provide additional benefits, helping Ready students maintain their performance in both subjects.

These results suggest the potential of Kide to support skill retention and development, particularly for students with a stronger initial foundation. The following sections present detailed statistical analyses of these key findings.

Qualitative analysis of Kide teacher perspectives

Methods

Forsyth County school district educators were invited to complete a survey detailing their experience using Kide in their classrooms. The district shared this survey with 42 assistant principals and 23 school principals to share with their teaching staff. Surveys were administered from December 2024 to January 2025 and consisted of multiple choice and open-ended questions; the latter could be answered via written response or recorded video response. Seven current Kindergarten teachers elected to participate. While it was a small sample, the surveys captured a range of data regarding the experience of Kide usage in the classroom, including general satisfaction, frequency of use, and perceived student learning and engagement.

All participating educators used Kide in their classroom in the 2024-2025 school year, with 25% of participants also using Kide in the 2023-2024 school year.

Analysis

Data was analyzed using content analysis, focusing on recurring patterns in teacher feedback. Responses were coded to identify key themes related to classroom integration, student engagement, and the benefits and challenges of using Kide.

Key Insights

The study revealed that teachers appreciate the creativity, play, and active learning Kide lessons inspire in their students. Teachers using Kide found the lessons to be engaging and unique, though sometimes difficult to schedule within their time available for science. Teachers felt their Kindergartners benefitted from the hands-on learning opportunities that "have helped to engage some of my students" and had overall positive feelings about Kide's impact on their confidence in teaching science and their knowledge of playful inquiry.

Teachers had no strong feelings that countered or were at odds with Kide's mission to enhance science education for educators and students.

Implementation of Kide

Scheduling, often outside of a teacher's control, appeared to have the greatest impact both on the frequency and duration of Kide usage. In this district, as in many currently in the US, there are limitations to the allocation of time or resources for science in Kindergarten classrooms. As a result, as one teacher shared, and several others echoed, sometimes the experiments were "too lengthy to where they were difficult to complete during a class segment."

Several teachers expressed interest in shorter Kide lesson options or in lessons with fewer materials needed. Kide lessons were often longer than a teacher was able to allocate for science on a given day, which then required extra planning to split the lesson over multiple days.

Incorporating the planning time to split or stretch lessons was also considered to be a roadblock, as one teacher stated, "I would say the pacing/time could be improved. A lot of schools I know don't have much time allotted for science, unfortunately, so it would be helpful to have some quicker lessons to incorporate along with some longer discovery ones."

Figure 8. Distribution of Teacher Responses to Close-ended Survey Questions
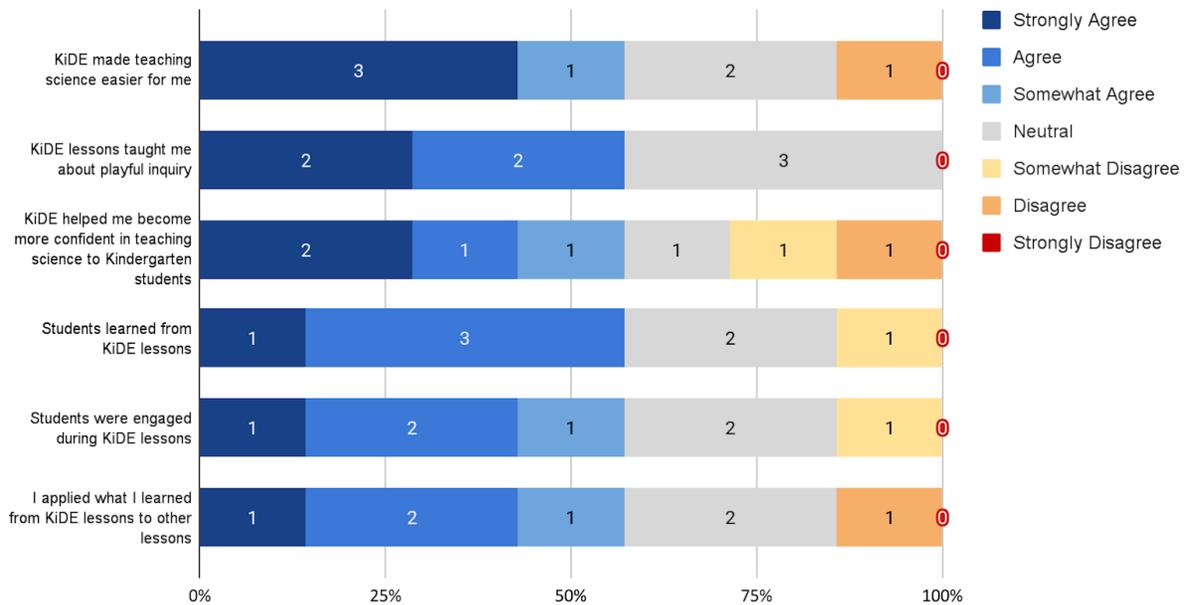
Positive Aspects

Teachers described Kide lessons as fun, playful, active, and engaging. One teacher felt the "lesson plans are straightforward and easy to follow." They appreciated "the varying levels of time/difficulty for each topic so I can choose what is best for my students."

Teachers also highlighted key engagement indicators like student recall of why they did each experiment and what they learned. One teacher made note of her students' language development, sharing, "They do talk more with academic language." and referencing specific themes and materials that align with other planned lessons: "Spooky Shadows, my kids LOVED it. We use flashlights on Fridays for reading, and when we used them to make shadows, they had a blast. The hands-on options."

The hands-on opportunities are a standout for teachers and make the lessons more impactful for students. They explained that they don't have as many lessons with opportunities for hands-on learning. As one teacher shared, "all of my students benefit from Kide, but especially those with a more playful nature/extra energy."

Teachers liked both Kide content and methods of delivery. Teachers made note of the ways in which the students demonstrated their understanding of the lessons. One teacher shared that she "liked the phenomenon videos because he had the students engaged and talking about

what they thought would happen." Another teacher felt that "the characters/stories and playfulness of Kide are its best features." She said her students "like how the characters are involved in the lessons and want to try to "help" them out in discovering/investigating different phenomena." This teacher heard students "using the science vocabulary in regular conversation more often than I did in past years without using Kide." She shared that after using the sink or float lesson, she observed her students at lunch and saw that they "talked about things sinking/floating in their milk at lunch (they shouldn't have been playing [with] their food, but... they were using the vocabulary!!)."

Teachers mentioned the guidance provided by the lesson plans, calling them "easy to follow, are detailed and have many activity opportunities for students to be engaged." Teachers note "the wide variety of lessons" and that they "align well with standards."

Additionally, Teachers shared feedback about how using Kide benefited their development as teachers. One shared, "I feel like my science knowledge has increased since using Kide and I feel more confident teaching it due to the kid-friendly and playful nature. At first, I didn't really enjoy Kide, but after using several lessons, I love it!"

Program Challenges

Surveyed teachers' primary challenge was integrating into set schedules; they cited schedule limitations on lesson durations as barriers to fully benefiting from Kide's offerings. Please see the *Implementation Issues* section for additional details on these challenges.

Feedback, particularly about content, was largely positive. Some teachers indicated that professional development or additional training and tutorials would be helpful. Specifically, teachers appreciated the detailed lessons and noted that they aligned with standards, but finding the right lesson for the class "theme" took additional time and effort.

Other Considerations

This is a small sample of teachers, and 71% of participants began the use of Kide during the 2024-2025 school year, providing them with roughly 4 months of use at the time of the survey. These limitations should be noted in consideration of this data.

Quantitative analysis of Kide's influence on student progress

What is the relationship between Kide implementation and student progress?

To assess the extent to which Kide implementation was associated with student progress during the 2023-2024 school year, student progress from Fall 2023 to Spring 2024 in GKIDS Math and GKIDS ELA was analyzed. Chi-squared tests were used to compare progress between treatment and control groups. This non-parametric method was selected because the outcome variables reflected categorical classifications of student progress (e.g., Decline, Maintain, Improve), rather than continuous scores. Since it does not rely on distributional assumptions, a Chi-squared test is well-suited for analyzing differences in proportions across groups. These analyses were conducted separately for Ready and Not Ready students to account for their distinct learning trajectories and better capture variations in student development.
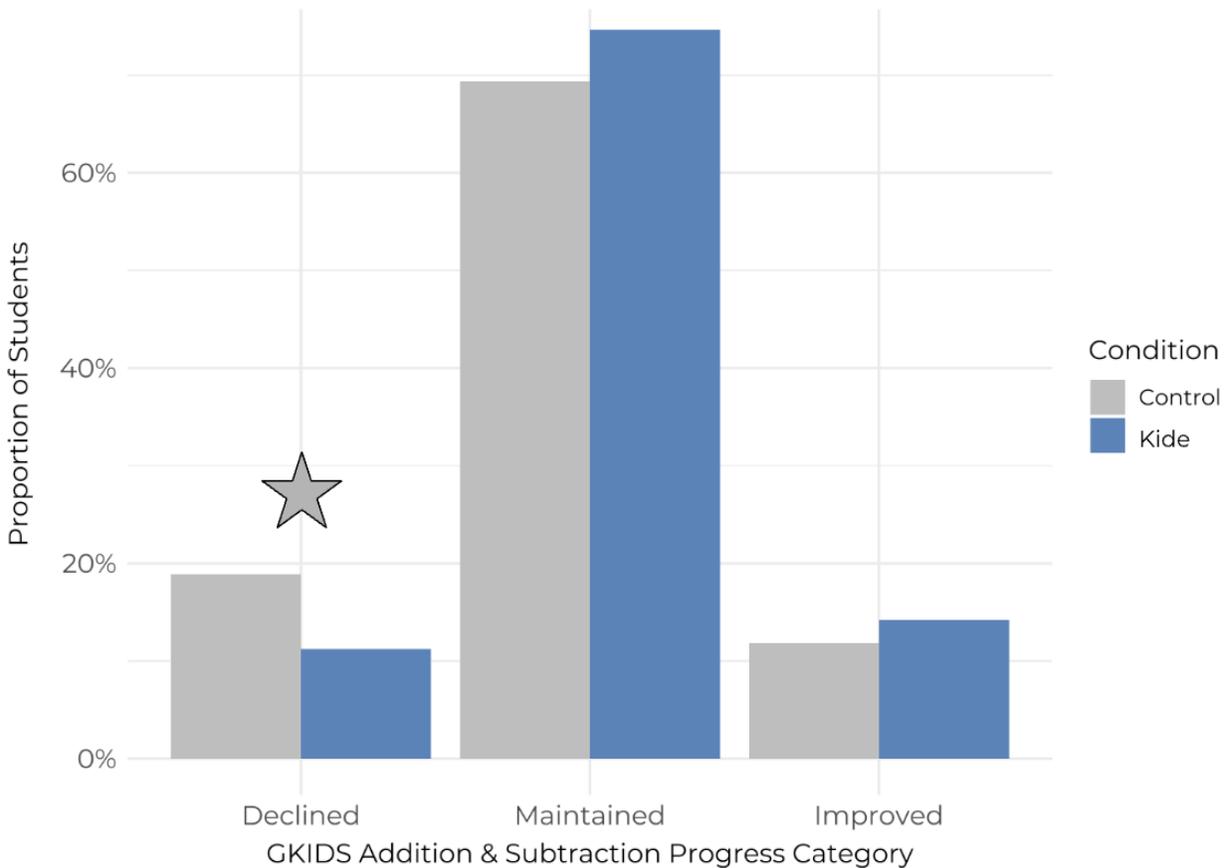
Math

Chi-squared analyses were conducted to examine the proportion of students who maintained, improved, or declined in performance from Fall 2023 to Spring 2024 across four math subdomains: Counting & Cardinality, Count Sequences, Written Numerals & Comparison of Quantities, and Addition & Subtraction. These analyses were performed separately for Ready and Not Ready students. For Not Ready students, there were no significant differences in progress proportions between the treatment and control groups in any subdomain. However, among Ready students, a significant difference in progress distribution across conditions was observed in the Addition & Subtraction subdomain with a small to moderate effect, $\chi^2(2) = 7.03$, $p = .03$, Cramer's V effect size = .107.

As shown in Figure 1, a significantly higher proportion of Ready students in the control group experienced a decline (19%) in their GKIDS Addition & Subtraction scores compared to those in the Kide treatment group (11%). Standardized residuals showed that the proportion of students declining was significantly higher than expected in the control group (Residual = 1.96) and lower than expected in the Kide treatment group (Residual = -1.43), suggesting that students in classrooms using Kide were protected from performance decline. Addition & Subtraction was the only subdomain in which a significant difference emerged for Ready students.

Figure 1. Student Progression in GKIDS Addition & Subtraction from Fall '23 to Spring '24


English Language Arts

Chi-squared analyses were also conducted to examine the proportion of students who maintained, improved, or declined in performance from Fall 2023 to Spring 2024 across six ELA subdomains: Phonemic Awareness, High-Frequency Words, Comprehension, Conventions of Writing, Spelling, and Communication of Ideas. These analyses were conducted separately for Ready and Not Ready students. For Not Ready students, no significant differences in progress proportions were observed between the treatment and control groups in any subdomain. However, among Ready students, significant differences emerged in the Comprehension ($\chi^2(2) = 7.65$, $p = .022$, Cramer's V effect size = .117, indicating a small to moderate effect) and Communication of Ideas subdomains ($\chi^2(2) = 11.36$, $p = .001$, Cramer's V effect size = .142, indicating a moderate effect).

In Comprehension, a significantly higher proportion of Ready students in the treatment condition (24%) improved their GKIDS scores compared to those in the control condition (15%; Figure 2). Standardized residuals showed that the proportion of students improving was significantly lower

than expected in the control group (Residual = -1.89) and higher than expected in the Kide group (Residual = 1.46).

Figure 2. Student Progression in GKIDS Comprehension from Fall '23 to Spring '24
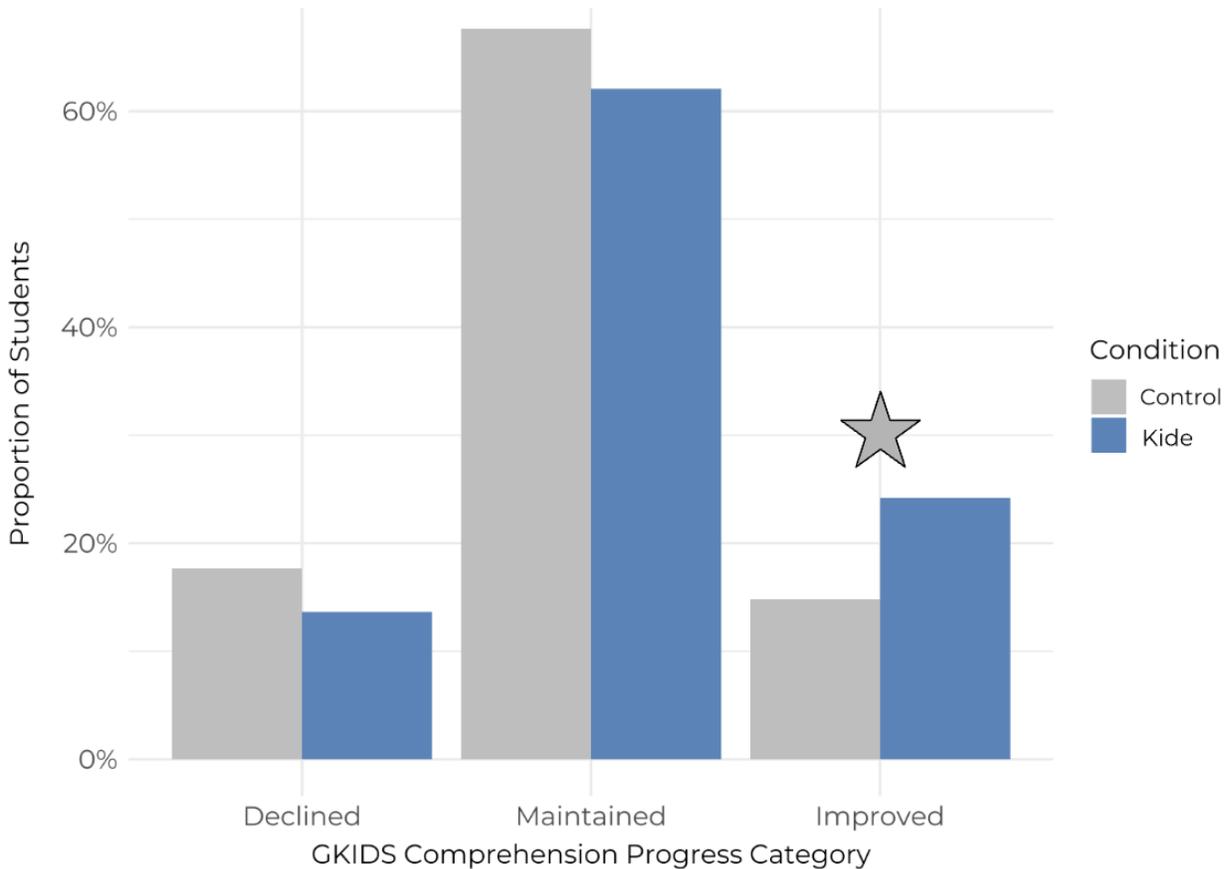
In Communication of Ideas, a significantly higher proportion of Ready students in the control group (20%) experienced a decline in their GKIDS Communication of Ideas scores compared to those in the treatment group (10%; Figure 3). Standardized residuals showed that the proportion of students declining was significantly higher than expected in the control group (Residual = 2.45) and lower than expected in the Kide treatment group (Residual = -1.90). These findings suggest that Kide usage supported comprehension gains and helped mitigate declines in communication skills for Ready students.

*Figure 3. Student Progression in GKIDS Communication of Ideas from Fall '23 to Spring '24*
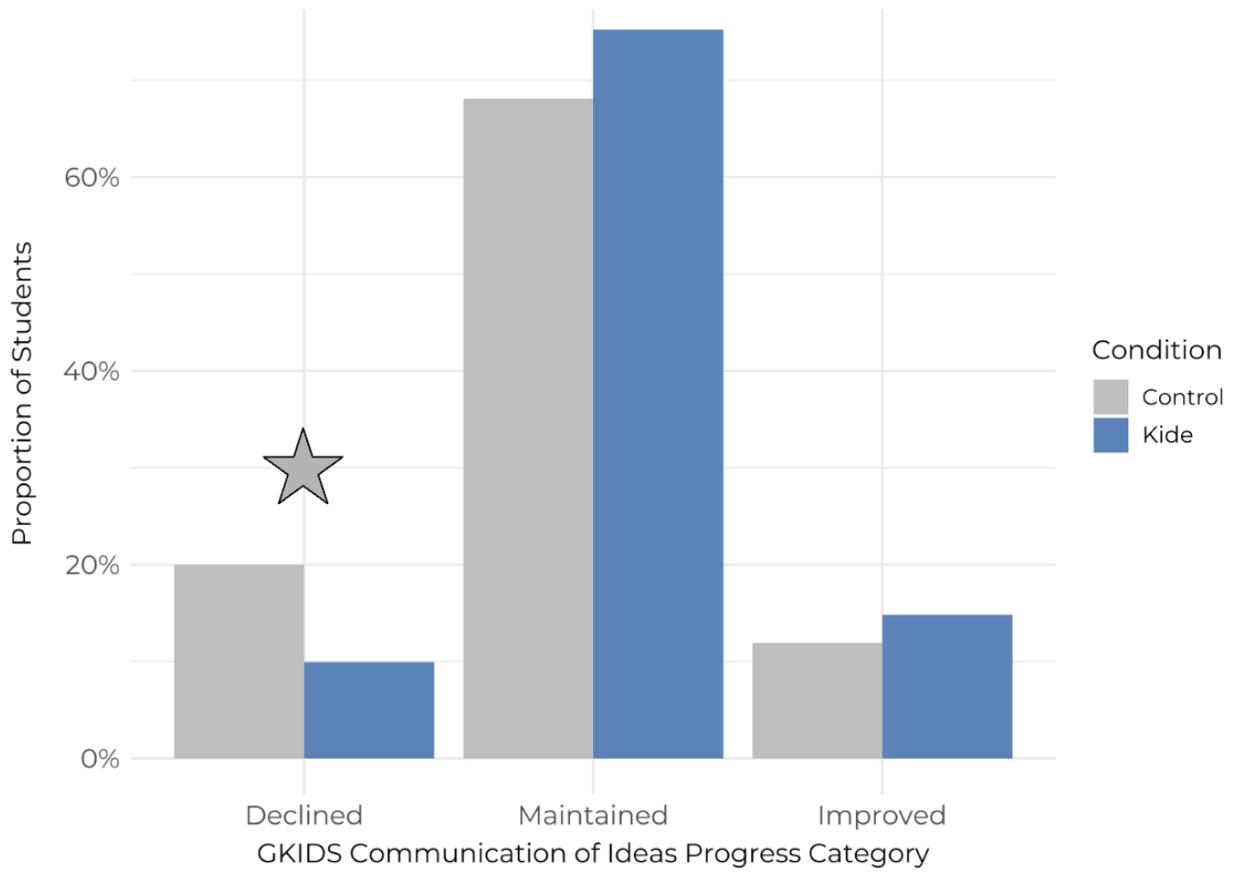
How does the amount of Kide usage relate to student progress?

Math

To examine the relationship between the amount of Kide usage and student progress in math, analyses were conducted on GKIDS Math progress distributions across different usage groups (high, low, and no Kide usage). When examining the overall distribution of progress categories across GKIDS Math subdomains, no significant differences were found for Not Ready students ($\chi^2(4) = 3.80$, $p = .434$). However, among Ready students, a significant difference in math progress based on Kide usage was observed, $\chi^2(4) = 20.05$, $p < .001$, Cramer's V effect size = .064, indicating a small effect). Students in high-usage classrooms were significantly less likely to experience declines in their math performance (5% decline versus 12% decline in No Usage and 9% decline in Low Usage; Residual = -3.34). This finding suggests that increased Kide usage may have provided a stabilizing effect, helping Ready students maintain their math skills over the school year.

*Figure 4. Overall GKIDS Math Progress by Kide Usage and Readiness*
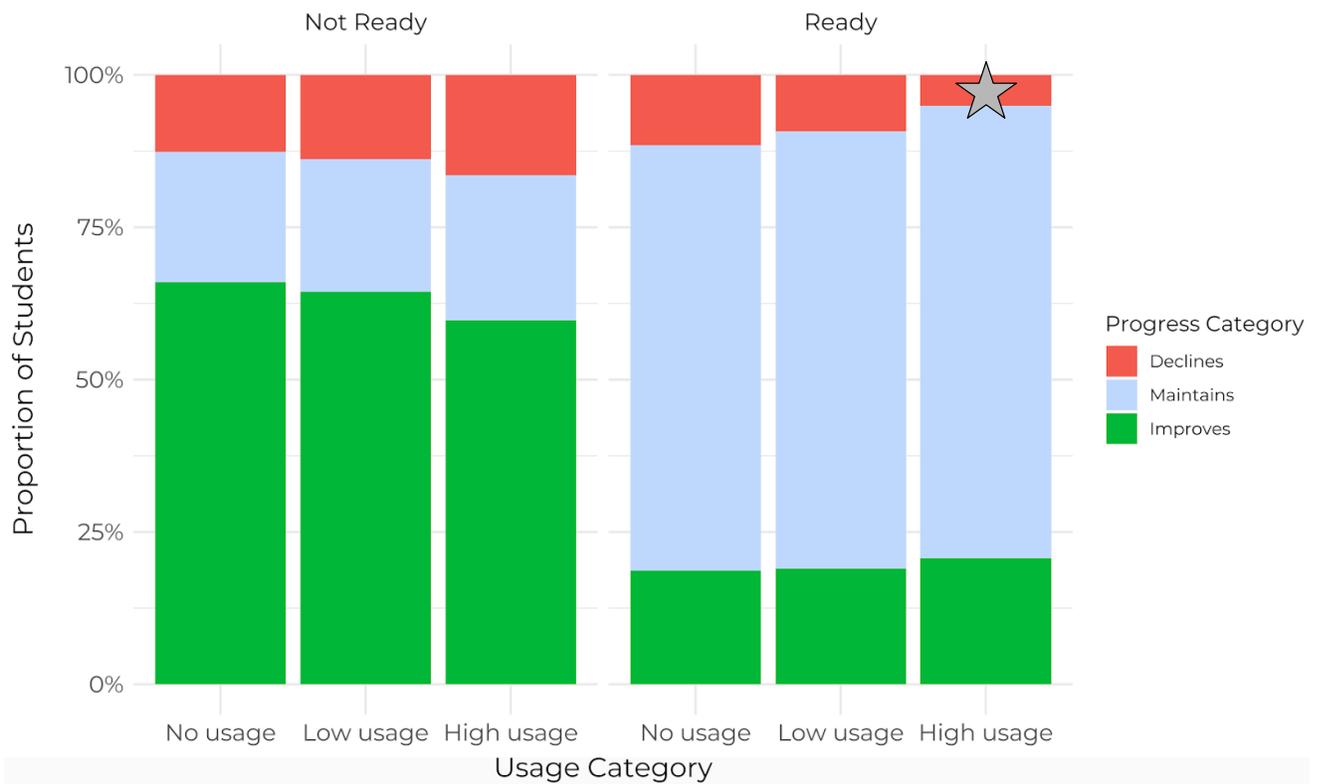
English Language Arts

A similar pattern was observed in reading. When examining the overall distribution of progress categories across GKIDS ELA subdomains, no significant differences were found between usage groups for Not Ready students ($\chi^2(4)$ = 6.95, p = .139). However, among Ready students, a significant difference emerged ($\chi^2(4)$ = 64.05, p < .001, Cramer's V effect size = .096 indicating a small to moderate effect given the degrees of freedom). High-usage students were significantly more likely to be protected from declines in ELA performance (8% decline versus 17% decline in No Usage and 18% decline in Low Usage; Residual = -5.29), with a greater proportion maintaining their performance compared to those in the control group (Residual = 3.29). These findings suggest that high Kide usage may have helped sustain literacy skills for Ready students over time.

Figure 5. Overall GKIDS ELA Progress by Kide Usage and Readiness
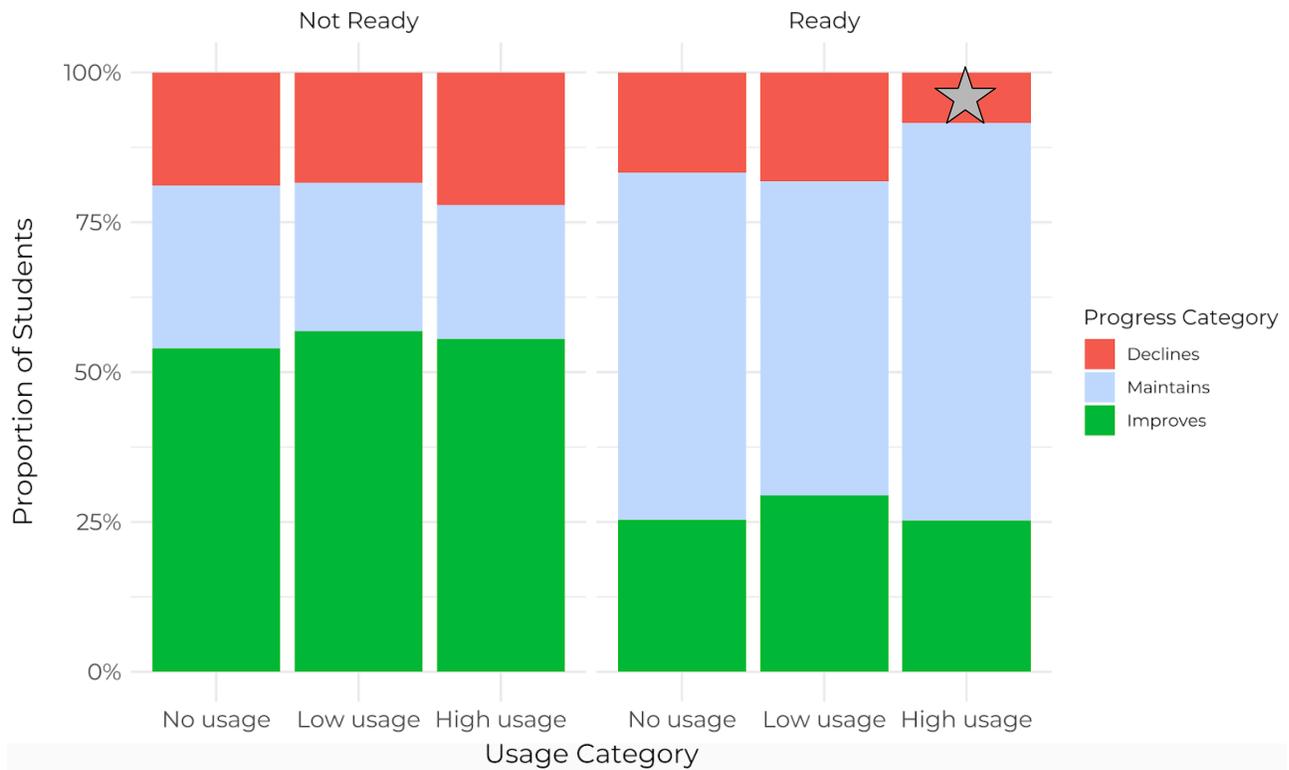
Are there distinct patterns of progress for "super users" of Kide?

To build on the comparisons of low, high, and no usage of Kide, a follow-up exploratory analysis was conducted focusing on "super user" teachers, those with the highest levels of Kide engagement. Specifically, super users were defined as being in a classroom with a teacher whose number of lesson views fell within the top 25% of the High Usage group (n = 69). On average, these super-user teachers logged over 80 lesson views for the year, indicating sustained use of the platform throughout the year.

This analysis focused exclusively on students who were labeled Not Ready at the beginning of the year. In the previously described analyses, no significant differences in growth outcomes were found for Not Ready students across general usage levels. As a result, this subgroup became the focus of a deeper examination: ***Does being in a classroom with consistently high levels of Kide use relate to greater progress for students who started the year behind?***

Students were grouped based on whether their teacher was classified as a super user. The comparison group included Not Ready students whose teacher was also in the High Usage category but whose total Kide use fell below the 75th percentile.

Math

Figure 6 presents the percentage of Not Ready students who improved from BOY to EOY across four math subdomains, grouped by whether their teacher was a super user of Kide. The pattern of improvement across subdomains was mixed. In Counting & Cardinality and Count Sequence subdomains, Not Ready super users (N = 29) showed higher rates of improvement, while in the other two subdomains, Not Ready students (N = 38) in the comparison group improved at higher rates. None of the differences were statistically significant (p > .05 for all subdomains). These findings indicate that, in math, super user-level Kide engagement was not consistently linked to better student outcomes.

Figure 6. Percent of Not Ready High Usage Students Who Improved by Math Subdomain
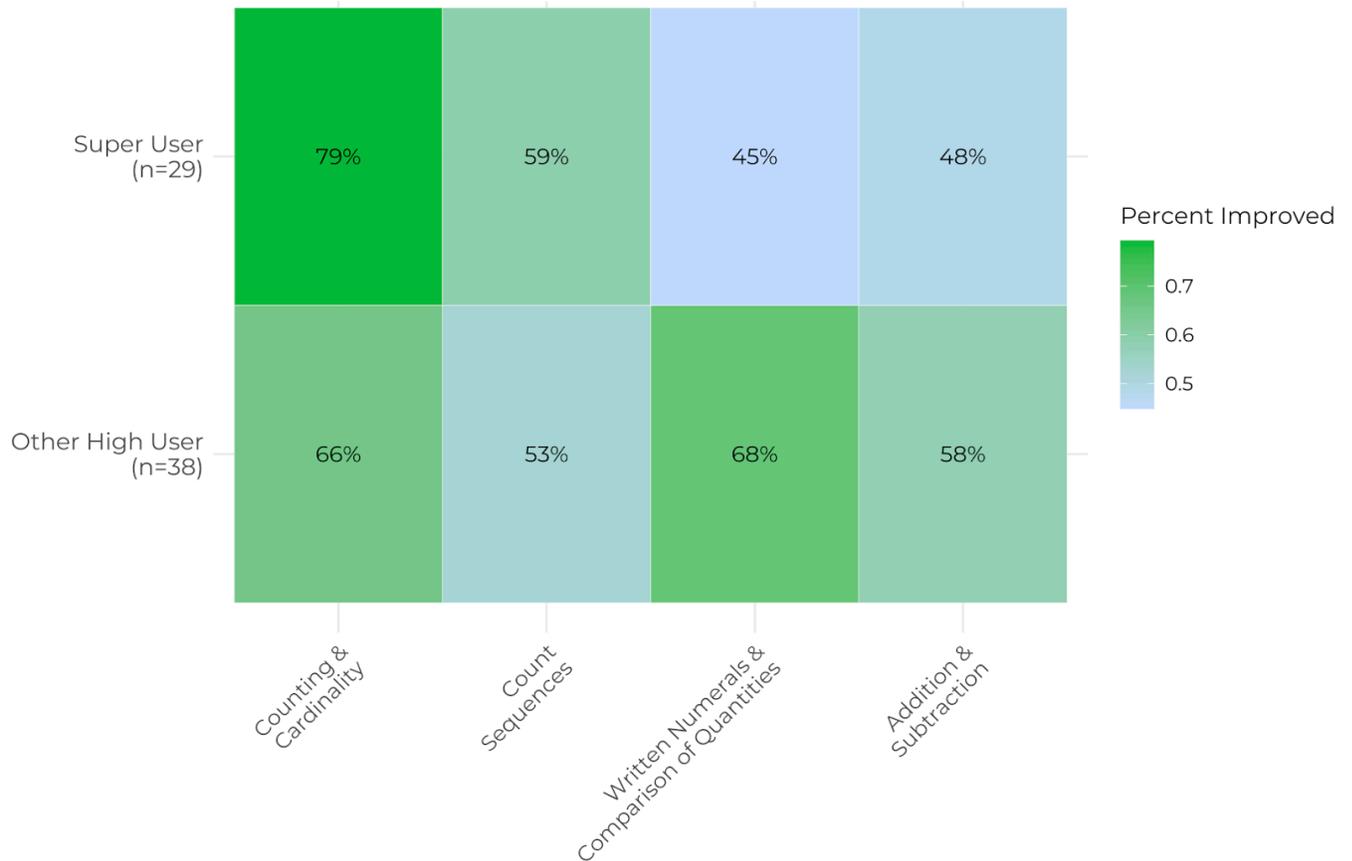

English Language Arts

Figure 7 displays improvement rates across the six ELA subdomains. In contrast to math, the ELA results revealed a clear and consistent pattern: across every subdomain, a greater proportion of Not Ready super users improved (N = 35) relative to the other Not Ready High Usage students (N = 47). Although most of these differences were not statistically significant, the difference in the Spelling subdomain was, with 71% of students improving in the super user group compared to 51% in the comparison group (p = .049). This consistent trend suggests that when teachers engage with Kide consistently, students may be more likely to make meaningful progress in foundational literacy skills.

Figure 7. Percent of Not Ready High Usage Students Who Improved by ELA Subdomain
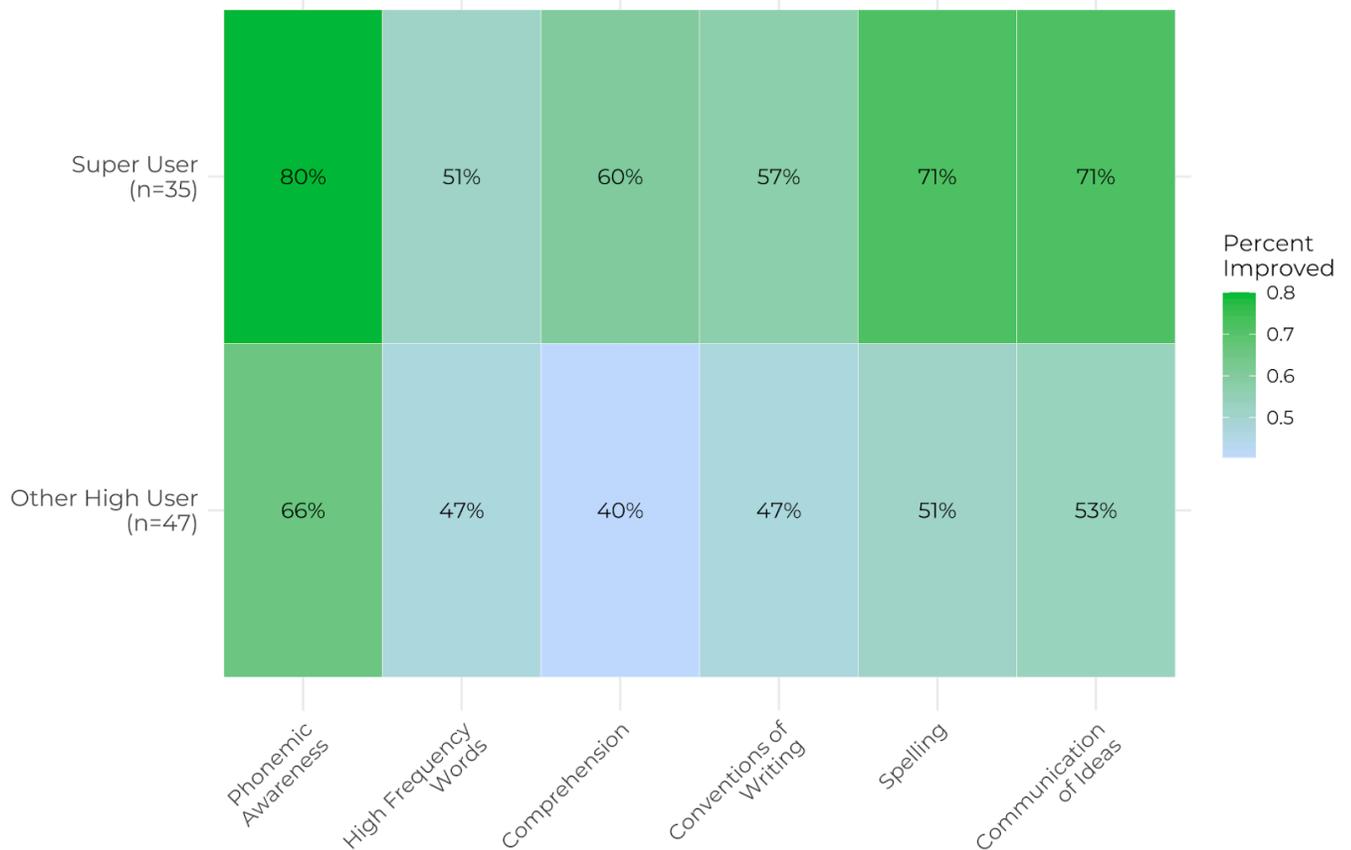
While the observed percentage differences in literacy improvement across subdomains were consistent and in favor of the super user group, most of these differences did not reach statistical significance. This may be due in part to the limited sample size of this subgroup analysis, which compared a subset of Not Ready students nested within a subset of High Usage classrooms. As a result, the findings should be interpreted cautiously but are still suggestive of a meaningful trend worth further investigation.

Discussion

This study examined the impact of Kide on kindergarten students' academic progress, particularly in early math and literacy. Results indicate that students who scored high on the kindergarten readiness test benefited from Kide, showing greater gains in Comprehension and fewer declines in Addition & Subtraction and Communication of Ideas. Higher Kide usage also appeared to reinforce score stability. However, there was no significant impact for Not Ready students, suggesting that Kide, as currently implemented, does not sufficiently support those who enter

kindergarten without foundational skills.

Recommendations for Implementation

For students with lower readiness, meaningful engagement in Kide's inquiry-based learning may require more explicit instruction in prerequisite skills. Without structured foundational support, these students may struggle to access and benefit from the curriculum. Incorporating targeted lessons that build early math and literacy skills before engaging in Kide activities could help bridge this gap. Additionally, teachers may need clearer guidance on identifying when students are struggling due to missing foundational skills versus other learning challenges. More structured support, such as diagnostic tools and scaffolding strategies, could help educators differentiate instruction and ensure that all students can progress.

These findings also reinforce that Kide functions best as a Tier 1 instructional tool rather than an intervention program. While it effectively supports students with some level of readiness, it does not provide the intensive, individualized support typically required for those significantly behind. Schools implementing Kide should supplement it with additional interventions for students who need more targeted assistance.

Moving forward, refining Kide's approach to better serve a wider range of learners, particularly those entering kindergarten without strong foundational skills, will be essential. Integrating prerequisite skill lessons, improving teacher guidance, and clarifying its role as a core instructional tool could strengthen its overall impact. Addressing these areas will help ensure Kide is an effective resource for all students, providing a more equitable foundation for early learning.

Limitations of the study

Several limitations should be acknowledged when interpreting the findings of this study. First, the availability and structure of assessment data varied between the beginning and end of the school year, limiting the ability to conduct direct comparisons of student growth. The available GKIDS data shifted from a domain-level structure in the Fall of 2023 to a subdomain-level structure in the Spring of 2024, which necessitated the creation of categorical progress metrics (e.g., maintain, improve, decline) rather than more granular growth scores. This inconsistency may have reduced the precision of the outcome measures.

Second, limitations inherent to the GKIDS assessment itself must be considered. The GKIDS Readiness Check, while aligned with state standards and widely used in Georgia, includes subjective elements and lacks established reliability metrics. As a teacher-administered

observational tool, scoring may be influenced by variability in how teachers interpret and apply performance-level criteria. These characteristics limit the assessment's ability to serve as a fully objective and standardized measure of student growth.

Lastly, the teacher survey component of the study had a limited response rate. Only seven kindergarten teachers opted to participate, and most had used Kide for less than half a year at the time of data collection. While the feedback gathered offers valuable insight into teacher experiences and perceptions of the program, the small sample size may not be fully representative of all Kide implementers in the district and should be interpreted with caution.

Conclusion and Next Steps

This study examined the impact of Kide Science on early academic development in kindergarten, focusing on both overall program effects and variation in outcomes based on student readiness and teacher usage levels. Findings show that Kide was particularly effective for students who entered kindergarten with foundational skills already in place. These "Ready" students were more likely to demonstrate gains in comprehension and less likely to decline in key areas such as addition and subtraction and communication of ideas. Higher levels of Kide usage provided an additional benefit, supporting the maintenance of skills over time.

Importantly, while broad comparisons showed limited impact for students who began the year with lower readiness, an exploratory analysis revealed that students in this group did benefit when their teacher was a frequent and consistent user of Kide. In classrooms led by "super users," a higher percentage of Not Ready students showed improvement in foundational literacy subdomains, with particularly notable gains observed in spelling. While most of these findings did not demonstrate statistical significance, the trends suggest that intensive and sustained implementation of Kide may support early literacy growth, especially for students who begin kindergarten with limited academic readiness.

These findings reinforce the value of Kide as a Tier 1 instructional resource while also pointing to areas for refinement. Ensuring that all students benefit from the program may require the development of supports that prepare learners with lower readiness to fully engage with its inquiry-based approach. This could involve incorporating scaffolded lessons that build prerequisite math and literacy skills, enhancing teacher guidance around differentiation and early identification of foundational gaps, and increasing flexibility in lesson design to fit within time-constrained schedules.

Future work should explore the long-term effects of Kide participation on student achievement, especially for those with varied readiness levels. Expanding the sample of educators contributing

feedback will also provide a broader understanding of implementation patterns and instructional adaptations across diverse settings.

With thoughtful adjustments and continued support for teachers, Kide Science has the potential to strengthen early academic development for a wide range of learners and serve as a meaningful component of a comprehensive kindergarten learning experience.

Acknowledgments

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