

Efficacy Study of ALEKS Adventure in a Pennsylvania School District

Michael A. Cook, PhD, Jane M. Eisinger, MS,
Alan Cheung, PhD, Steven M. Ross, PhD

October 2025



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Michael A. Cook, PhD, Jane M. Eisinger, MS,
Alan Cheung, PhD, Steven M. Ross, PhD

Center for Research and Reform in Education
The Johns Hopkins University School of Education
2800 N. Charles St
Baltimore, MD 21218
<https://education.jhu.edu/crre>

Preferred citation: Cook, M.A., Eisinger, J.M., Cheung, A., & Ross, S.M. (2025). *Efficacy study of ALEKS Adventure in a Pennsylvania school district*. Center for Research and Reform in Education, The Johns Hopkins University.

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EXECUTIVE SUMMARY

In this descriptive mixed-methods study, we examined the impacts of McGraw Hill's ALEKS Adventure program on Grades 1-2 student math achievement in a Pennsylvania school district. The primary focus of this report was ALEKS Adventure's impacts on Aimsweb math scores (Early Numeracy and Mathematics assessments), as well as teacher perceptions of the ALEKS Adventure program.

- Beginning-of-year (BOY) to end-of-year (EOY) Aimsweb math score gains were examined in the primary quantitative analyses, with gains also analyzed by subgroup.
- In addition, we examined associations between student-level digital ALEKS Adventure usage data and Aimsweb math scores.
- The analytic sample consisted of 310 Grades 1-2 students from three elementary schools. The interview sample consisted of eight Grades 1-2 teachers that used ALEKS Adventure in the 2024-25 school year.
- McGraw Hill provided student-level digital usage data, including metrics such as total program time, course progress, and counts of skills learned.
- Descriptive analyses showed that Grade 1 students averaged nearly 25-point gains on Aimsweb Early Numeracy scores from BOY to EOY in 2024-25, while Grade 2 students averaged nearly 55-point gains on Aimsweb Mathematics scores from BOY to EOY.
- Students averaged nearly 20 hours of total program usage time across the 2024-25 school year, with students in each grade level averaging similar amounts of total program usage time. Measures of course progress and topics learned were significantly positively associated with EOY MAP math scores.
- Teachers highlighted the program's effectiveness in providing differentiated and independent learning opportunities, allowing students to progress at their own pace and engage with tailored activities.
- They noted the program's strengths in engaging students and providing opportunities to reinforce math skills, although there were concerns about its ability to ensure deep mastery of concepts.
- Overall, teachers praised the program for engaging students and boosting their confidence, especially through visual tracking tools and gamification elements.



INTRODUCTION

Overview of ALEKS Adventure

In the fall of 2024, McGraw Hill partnered with the Center for Research and Reform in Education (CRRE) at Johns Hopkins University to test the impact of ALEKS Adventure in a Pennsylvania school district. As described by McGraw Hill, ALEKS Adventure is a math program intended for early elementary grades and consists of an artificially intelligent learning and assessment system that identifies a students' strengths and weaknesses in math and provides targeted coverage of prerequisite skills. It intermittently reassesses students to ensure retention of those skills as they advance to new topics. ALEKS Adventure also provides teachers with class management tools for monitoring student progress and directing learning remotely. To increase motivation and engagement, the program creates a game-like environment, in which students complete lessons to earn coins that can be spent on customizing their avatar and spaceship.

Overview of the Evaluation

To evaluate the impact of ALEKS Adventure, CRRE collected Aimsweb score data from all Grades 1 and 2 students from the district's three elementary schools. As all district Grades 1-2 classrooms used ALEKS Adventure, no comparison group was available. Thus, descriptive and correlational approaches were used to examine program efficacy. Aimsweb math increases from fall to spring of the 2024-25 school year were analyzed descriptively and compared to Aimsweb math score increases from the prior school year, where possible. Student-level digital program usage from the ALEKS Adventure platform was also analyzed descriptively and correlationally to the relationship of various program dosage indicators to achievement gains. In addition, teachers were interviewed to gain qualitative perspectives regarding teacher perceptions of the program.

The mixed-methods design addressed these research questions:

1. What are teachers' perceptions of ALEKS Adventure?
2. To what extent is ALEKS Adventure associated with increased achievement for individual students?
3. Are there patterns of usage associated with achievement?
4. Are there student characteristics associated with achievement?

METHOD

Research Design

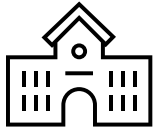
The main outcome measure of this study was the Aimsweb Grades 1 (Early Numeracy) and 2 (Aimsweb Mathematics) math scores from spring of 2025. Three elementary schools participated in the study. Math achievement gains were also examined by grade level and student subgroup. Supplemental analyses were conducted to examine associations between digital ALEKS Adventure program usage data and math achievement gains. Additionally, teachers participated in a voluntary interview regarding



their perceptions of the ALEKS Adventure program.

Participants

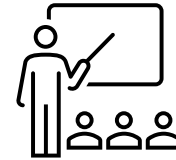
Details about study participants are presented below.



3 elementary schools

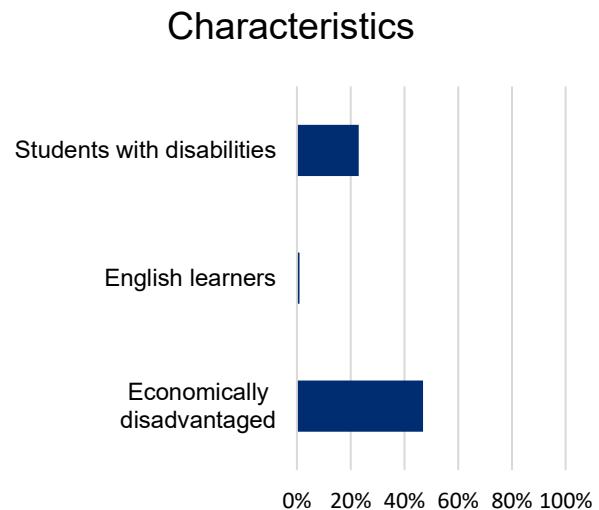
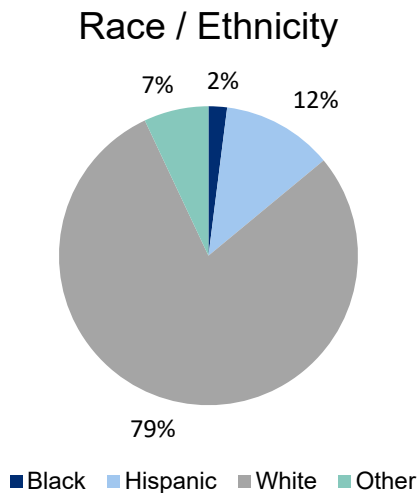


310 Grades 1-2 students



8 Grades 1-2 teachers

Demographic snapshot of student participants



The study was conducted in a small rural Pennsylvania district that serves approximately 2,200 students across five schools. All three district elementary schools participated in the study. Most of the students in the study sample were White (79%), followed by Hispanic (12%) and Other Race students (7%). Approximately 22% of students were classified as SPED, and 47% were classified as economically disadvantaged students, while only 1% were classified as English learners.

The study also included interviews of teachers who used ALEKS Adventure in the 2024-25 school year. A total of eight first or second-grade teachers were interviewed from the 19 teachers who implemented the program, resulting in a participation rate of 42.1%.

Measures

To address the research questions, the study team gathered and analyzed data including student math achievement data, student-level digital program usage data, and



teacher interview data (see Table 1).

Table 1
Research questions with data sources and measures

Research questions	Student achievement data	ALEKS Adventure usage data	Teacher interviews
1. What are teachers' perceptions of ALEKS Adventure?			✓
2. To what extent is ALEKS Adventure associated with increased achievement for individual students?	✓		
3. Are there patterns of usage associated with achievement?	✓	✓	
4. Are there student characteristics associated with achievement?	✓		

Aimswest Plus. The district provided CRRE with 2023-24 and 2024-25 BOY and EOY Aimsweb Early Numeracy and Mathematics scores for all Grades 1-2 students in the district elementary schools that used ALEKS Adventure. Aimsweb Early Numeracy is a teacher-administered assessment administered to Grades K-1 students, while Aimsweb Mathematics is a computer-administered assessment administered to all students in Grade 2 and higher. The two assessments are very different in terms of administration type and medium, and scale scores from each assessment differ and cannot be compared. Thus, Grade 1 Early Numeracy scores and Grade 2 Mathematics scores are analyzed separately throughout this report.

ALEKS Adventure digital usage. McGraw Hill provided CRRE with student-level digital usage data from the ALEKS Adventure program platform. The main program usage metric was student time spent on the ALEKS Adventure program. We also examined metrics relating to counts of skills learned and total progress (called pie progress within ALEKS Adventure). These data were available for all students who used ALEKS Adventure, and usage data were linked with achievement data to allow for analyses of associations between ALEKS Adventure program usage and math achievement.

Teacher interview. The semi-structured interview protocol (see Appendix A) consisted of 23 questions that solicited participants' perceptions regarding implementation; usability; perceived benefits of ALEKS Adventure for students and teachers; strengths, weaknesses, and recommendations for future use. A total of eight teachers implementing the program in either 1st or 2nd grade were interviewed.



Analytical Approach

Achievement data for students in Grades 1-2 were analyzed descriptively to detect patterns in Aimsweb mathematics scores for students who used ALEKS Adventure. The Aimsweb math score at the beginning of each school year (BOY) was defined as a pretest measure, while the EOY Aimsweb math score in each school year was defined as a posttest measure. We analyzed pretest-to-posttest gains descriptively for the entire sample by grade level and by student subgroup. As mentioned earlier, Early Numeracy (Grade 1) and Mathematics (Grade 2) scores are on different scales and thus were analyzed separately throughout this report. We also performed correlational analyses examining associations between ALEKS Adventure digital usage and achievement gains.

RESULTS

We begin this section of the report with findings related to student math achievement gains across the 2023-24 and 2024-25 school year. Then, we present results pertaining to associations between ALEKS Adventure digital usage and math achievement gains. We conclude with results from the teacher interviews.

Math Achievement Gains

To what extent is ALEKS Adventure associated with increased achievement for individual students?

Key Findings

- > Grade 1 students who used ALEKS Adventure averaged significant gains of 25 points on Early Numeracy whereas Grade 2 students averaged 54 points on Aimsweb Mathematics.
- > Gains on both Aimsweb Early Numeracy and Mathematics assessments were consistent across student subgroups.

2024-25 Analyses

Results of descriptive analyses of BOY-to-EOY Aimsweb math score gains for all Grades 1-2 students in the 2024-25 school year are presented in Table 2. We conducted dependent *t*-tests to examine the statistical significance of BOY to EOY score gains.

Table 2

Average Aimsweb Math scores, by grade level, 2024-25 school year



Group	BOY score	EOY score	Change
Grade 1 ($n = 152$; Early Literacy)	40.97	66.08	25.11
Grade 2 ($n = 158$; Mathematics)	163.51	217.68	54.18

Note: Both BOY to EOY gains were significant at $p < .001$.

Across both grade levels, BOY-to-EOY gains were significant and large in magnitude. Grade 1 students averaged more than a 25-point gain on Aimsweb Early Numeracy in 2024-25, while Grade 2 students averaged nearly a 55-point gain on Aimsweb Math. Although these gains were statistically significant, in the absence of available norms for either assessment, it is difficult to interpret their magnitude from a normative perspective.

We also descriptively analyzed BOY-to-EOY Aimsweb math score gains for student subgroups including gender, race/ethnicity, special education status, ELL status, and economically disadvantaged status. The results of these analyses can be found in Table 3. Note that these analyses were conducted separately by grade level, due to differences in the scales of the Early Numeracy and Mathematics assessments.

Table 3

Average Aimsweb Math scores, by grade and subgroup, 2024-25 school year

Group	BOY score	EOY score	Change
Grade 1 (Early Numeracy)			
Female ($n = 72$)	38.76	64.15	25.39
Male ($n = 80$)	42.96	67.81	24.85
White ($n = 121$)	41.46	66.98	25.52
Hispanic ($n = 17$)	36.88	60.59	23.71
SPED ($n = 39$)	33.87	56.85	22.98
Economically disadvantaged ($n = 71$)	38.99	62.59	23.60
Grade 2 (Mathematics)			
Female ($n = 79$)	153.71	209.65	55.94
Male ($n = 79$)	173.31	225.72	52.41
White ($n = 128$)	165.20	219.26	54.06
Hispanic ($n = 18$)	151.72	205.72	54.00
SPED ($n = 34$)	144.59	185.71	41.12
Economically disadvantaged ($n = 79$)	154.10	207.52	53.42

Note: All BOY to EOY gains were significant at $p < .001$.

Math achievement gains for students in various subgroups were comparable to those observed across the overall Grades 1 and 2 samples, with average gains across Grade 1 students averaging between 23-26 points and average gains for Grade 2 students averaging between 41 to 56 points. In both grades, but especially Grade 2, the gains for SPED students were relatively lower. Some of the sample sizes for subgroups were quite small ($n < 25$), so some caution should be exercised in interpreting these results.



Associations Between Program Usage and Achievement

Are there patterns of usage associated with achievement?

Key Findings

- Students averaged approximately 20 hours of usage, 38 skills learned, and 76% progress through the ALEKS Adventure course.
- Grade 2 students averaged approximately 11 more skills learned and 4% more course ALEKS Adventure course progress.
- Course progress and counts of skills learned were significantly positively associated with spring Aimsweb scores. Correlations with Aimsweb math score gains were considerably smaller in magnitude, especially for measures of course progress.

In this section, we overview the results of analyses examining student-level ALEKS Adventure usage metrics. Table 4 shows the results of descriptive analyses of ALEKS Adventure digital program usage.

Table 4

Average ALEKS Adventure usage, overall and by grade level

Grade level	Total minutes	Skills learned	Pie progress*	N
Overall	1174.25	38.41	75.60	313
Grade 1	1195.43	33.00	73.84	161
Grade 2	1151.82	44.14	77.47	152

Note: *A program metric reflecting counts of skills learned and total progress.

Across the entire sample, students averaged approximately 19.6 hours of ALEKS Adventure program usage during the school year, which entailed slightly more than 38 skills learned and slightly more than 75% progress through the course (pie progress). Total usage in terms of time in the program was consistent across grade levels, with students in both grades averaging between 19 and 20 hours of total program usage. Average counts of skills learned and percentages of course progress were both slightly larger for Grade 2 students, with these students averaging 11 more skills learned and 4% more course progress than did Grade 1 students.

Next, we examined the results of Pearson correlations measuring the associations between ALEKS Adventure usage and Aimsweb math scores. These results, which are summarized by grade level, can be found in Table 5.



Table 5
Associations between ALEKS Adventure usage and math achievement

Usage variable	EOY score	BOY to EOY gain	N
Grade 1			
Pie progress	+.59**	+.05	161
Total minutes	-.16	-.07	161
Skills learned	+.27**	+.10	161
Grade 2			
Pie progress	+.32**	+.28**	152
Total minutes	-.18*	-.05	152
Skills learned	+.43**	+.19*	152

Note: * $p < .05$; ** $p < .01$.

Total pie progress (course progress) was moderately to strongly associated with EOY Aimsweb scores ($.32 < r < .59$), whereas counts of skills learned were weakly-to-moderately associated with EOY Aimsweb scores ($.27 < r < .43$). The magnitudes of these associations decreased considerably when usage was correlated with BOY-to-EOY Aimsweb score gains, with all correlations having a magnitude of .28 or less. Total program time was not meaningfully associated with Aimsweb math scores or score gains, as these correlations were negative in direction and very weak in magnitude. The attenuation of correlations for gain scores in relation to EOY Aimsweb scores likely indicates that students with higher EOY Aimsweb math scores tended to use ALEKS Adventure to a higher degree, but they did not necessarily make considerably larger gains than other students since they started at a higher baseline level of mathematics achievement.

Teacher Perceptions of ALEKS Adventure

This section of the report begins with findings related to teachers' perceptions of ALEKS Adventure. Then, we present results pertaining to what extent ALEKS Adventure is associated with increased student learning and engagement.

What are teachers' perceptions of ALEKS Adventure?

Key Findings

- > Teachers reported that ALEKS Adventure effectively supported instruction by offering personalized learning paths and allowing students to work at their own pace.
- > Teachers were consistently surprised by how engaged and motivated students were during program use. Features like real-time rewards, character customization, and social interactions contributed to a positive classroom environment.



- Teachers reported that the program fostered student autonomy by allowing learners to choose skills that interest them, monitor their own progress, and work independently.
- Several teachers made suggestions for minor improvements, such as additional supports for struggling students, increased reinforcement of skills to build mastery, and increased alignment with PA standards.

Eight teachers in total, four teaching first grade and four teaching second grade, volunteered to provide feedback through interviews on their experiences with and reactions to the ALEKS Adventure program. We begin with a summary of participants’ implementation experiences and then present a summary of participants’ perceptions of program features, strengths and challenges, and suggestions for program improvement.

The teachers stated that the main way that ALEKS Adventure supported their instruction was by providing differentiated and independent learning and supplemental practice to students in math. Five of eight teachers highlighted the fact that students could practice skills at their own pace and that activities were tailored to each learner’s needs. Additionally, half the teachers spoke about the opportunities presented to reinforce math skills and to enrich math instruction beyond the core curriculum. One teacher noted that the program’s purpose in their school was originally to guide instruction but that, “because it’s not aligned with Pennsylvania [standards], it made it very difficult to use it in the intent that was originally provided to us. Now it’s more a support to whatever your core program is.” Another teacher elaborated on the program’s strengths in that capacity, saying:

I use it as a supplemental activity. I have a lot of high achievers. It's really nice to kind of set them loose, working on sometimes 3rd and even 4th grade topics. And then some of my struggling students, it's really nice to be able to give them something that they can do independently at their own level.

Program implementation, as described by the teachers, varied between the first and second grade classrooms, as summarized in Table 6.

Table 6
Modalities of implementation by grade

Modalities of implementation	Grade 1 classrooms	Grade 2 classrooms
Time ALEKS Adventure is implemented during the school day	Independent work Small groups Intervention time Station rotation WIN time	Flex time Station rotations Small groups Designated program time Morning work



Devices students use to access the program	Chromebooks	Chromebooks
Device accessibility (1:1/shared)	1:1	1:1
Length of typical session	10-15 minutes	Varies - at least 10'
Presentation-type (whole class, groups, rotations, etc.)	Varies. Program is not used as a whole class activity. Typically students access independently during their math block or at other times throughout the day.	Varies. One teacher uses the program as a whole class activity for 15' each week. Typically students access ALEKS Adventure during flex time.
Barriers to implementation (Wi-Fi, device accessibility, etc.)	Occasional Wi-Fi issues	Occasional Wi-Fi issues
Core Math Curriculum	Reveal Math	Reveal Math
Program replaced by ALEKS Adventure	Mathseeds	N/A
Other math programs/materials used in the classroom	IXL – additional practice Reflex Math – for fluency ABCya! – for variety Gimkit – customized practice	Reflex Math – for fast facts and fluency IXL – for practice Reveal Math – additional resources

Students in both first and second grade accessed ALEKS Adventure using 1:1 Chromebooks. In first grade classrooms, teachers did not have all their students access the program at the same time. However, this did occasionally occur in 2nd grade classrooms as illustrated by one teacher stating that, “Every once in a while, if we have a wonky schedule and are short on ALEKS Adventure, then I will say we’ll all do for 15’.” Teachers stated that the average ALEKS Adventure session ranged from 10-20 minutes and that Wi-Fi issues very rarely hindered program use.

Most teachers indicated that their students could access the program during more than one time during the school day, with program use varying from day to day depending on the classroom schedule and the needs of the student. The most common time of program use, in order of frequency, were the following:

- during flex or intervention time, often while teachers pulled small groups
- after whole-group math instruction
- as a station rotation
- during WIN time



- as morning work or during a weekly designated time

One teacher described the program's use in their classroom by saying:

We use it every day during flex time. I'm pulling groups – the rest [of my students] get that enrichment through ALEKS Adventure. They also use it in the morning too; they look at their standards and skills graph and can choose what they want to work on.

Most teachers reported using the program's data and reports, most frequently to either monitor student progress with the pie charts and standards and skills graphs or to form small groups by identifying and grouping students who struggled with similar topics. Smaller numbers of teachers also used this information for instructional planning, for enabling students to monitor and highlight their progress over time, and during IEP reporting and parent conferences. In reference to the latter use, a teacher stated, "I printed out the report during conference time, because I liked that. It showed the skills that the student had mastered, the skills that they were ready to learn, and it broke it down for the parents." One teacher acknowledged that they had stopped using the data and reports during the school year because the program was not aligned with state standards. The one teacher who did not use the data and reports at all explained that they were more focused on the program's student-facing benefits but that they intended make use of this feature in the future.

When asked if anything about ALEKS Adventure had surprised them, teachers most frequently mentioned the high level of student engagement and motivation that they observed. Half of the teachers noted that students were more captivated than expected, especially by the real-time rewards and the ability to customize their characters. The social interaction features, such as sending greetings, were also unexpected but appreciated. These elements contributed to a stronger sense of community and classroom positivity, as students became more connected and supportive of one another. One teacher commented on this by saying, "I was surprised about how many students love to send those greetings to each other, and how excited and enthusiastic they are!" Another common surprise was the speed at which students progressed through the program, particularly high-achieving students who completed entire grade levels much faster than anticipated. Teachers attributed this to both the program's effectiveness and the students' enthusiasm. Two teachers were surprised by the depth and breadth of the content of the program, noting that it covered more topics and offered richer learning experiences than other programs, including Reflex Math. This depth kept students engaged and provided a more comprehensive educational tool. Finally, two teachers mentioned being surprised by the freedom students had to choose skills that interested them, which encouraged autonomy and personalized learning.

The eight teachers expressed mixed opinions on how helpful built-in scaffolds, such as hints, visuals, and manipulatives, were for students struggling to grasp a concept. One teacher remarked that they "hadn't noticed much about them." For the others, the manipulatives and visual aids were seen as effective and engaging, especially tools like base-10 visuals for addition, which were cited multiple times as clearly supporting



comprehension. However, some hints were described as inconsistent, too short or vague, or lacking instructional depth, sometimes just rephrasing a prompt rather than truly guiding the learner. Teachers acknowledged that these hints worked better for average or above-average students, while students who were genuinely struggling frequently needed teacher support or guessed randomly when hints were not enough. Another important theme here was accessibility challenges, particularly for younger learners or those with limited reading skills. Visual scaffolds were sometimes underutilized because the accompanying text was not read aloud, creating frustration for students who could not read the text. Two teachers recommended the inclusion of instructional videos as a more effective alternative. Additionally, certain math concepts, like tallies and place value, were identified as being particularly challenging, with these scaffolds failing to eliminate students' need for assistance from their teacher.

Five of eight teachers would recommend the program to other educators, with the remaining three being neutral. Those who would recommend the program would do so because it supported all students and strengthened their math skills, it offered time-savings for teachers, it provided personalized learning paths for students, and it elicited good student engagement. These teachers reported that the program was an effective resource for their students, with one saying, "It's a really great supplemental activity to be able to use whether a student struggles or really excels." They also appreciated that the program distributed rewards and personalized practice for students, saving teachers from having to build time for these tasks. The program's adaptive learning paths, guided by knowledge checks, allowed students to work on skills they were ready for, making time spent in the program more efficient and impactful. Beyond the academic benefits, teachers mentioned how much their students genuinely enjoyed the experience, pointing out the fun factor as a powerful motivator for continued use. While all of the teachers who were neutral about recommending the program to others saw benefits to the program, they also expressed concerns regarding various limitations. One noted that the program did not revisit skills often enough to build mastery. Another stated that it was a "drawback" that the program did not align more closely with Pennsylvania standards. The third related that the program was not significantly different enough from other digital math tools to warrant their recommending it to others.

Teachers identified student engagement and accessibility features as the program's greatest strengths. Many praised the program's ability to read instructions aloud, which supported struggling readers and fostered independence. One teacher commented, "I love that ALEKS Adventure reads to them, gives them access without me. Weak readers struggle with that self-image, so this is something that they can do completely on their own." The program's visual appeal and game-like elements were also highlighted as major draws that immediately captured students' attention. Several teachers noted that the program was kid-friendly and easy to navigate, which reduced confusion and allowed students to work independently with confidence. Others appreciated the data transparency, especially how students were able to monitor their own progress in a simple, age-appropriate format. Additionally, the program was credited for promoting student ownership, helping learners feel proud of their achievements without relying heavily on teacher support. Overall, the strengths centered on how the program empowers students through engaging, accessible, and



self-directed learning experiences.

Teachers offered several suggestions to improve the program, with the most frequent being the need for more content and better skill reinforcement. Multiple teachers expressed concern that students completed the program too quickly without truly mastering skills, suggesting that the program should automatically prompt for additional practice and offer deeper content per standard. Another common theme was the need for better alignment and continuity, both within the program and between ALEKS Adventure and ALEKS, including smoother transitions and consistent language. Teachers also recommended enhancing support features, such as improved hints and pop-up tools like number grids, to aid problem-solving. Additionally, several emphasized the importance of student motivation, particularly over time, proposing features like a badge wall to highlight achievements and discreet ways to revisit skills without discouraging students.

Program's Association with Increased Student Learning and Engagement

To what extent is ALEKS associated with increased student learning and engagement?

Key Findings

- All teachers agreed that the program improved student confidence, especially through visual progress tools like pie charts and rewards. They noted that even struggling students felt empowered by tracking their growth and working independently.
- They highlighted the program's individualized learning paths, which supported both advanced learners and those needing extra help.
- Six teachers observed measurable progress, with students advancing beyond grade level. Growth was often paired with increased motivation and engagement.
- All teachers stated that students enjoyed the program, particularly the graphics, characters, and game-like format although a few noted that engagement could fade over time or vary based on individual needs.

All teachers agreed that ALEKS Adventure boosts students' confidence, especially through visual progress tracking and motivational features like rewards and pie charts. Five of the eight teachers described how students feel proud and excited when they see



their growth, which encourages continued engagement and builds a sense of ownership over their learning. This confidence was particularly noticeable even among struggling students, who felt empowered by being able to work independently. One teacher, speaking to this point remarked, “[T]hey love their pie charts. So excited when they see growth! Really boosts their confidence, even the strugglers and ELA.”

However, when it came to mastery of math concepts, the feedback was more mixed and cautious. Several teachers questioned whether students were truly mastering the content, noting that some students completed levels quickly without demonstrating deep understanding. Concerns were raised about the lack of re-teaching components and the possibility that the program’s mastery indicators might be inflated or misleading. While a few teachers acknowledged that students could track their progress and identify areas for growth, most felt that true mastery was not consistently achieved, especially in more complex areas like multi-step problems.

Most teachers felt that the program was especially helpful for practice and retention, thanks to features like short lessons, immediate assessments, and periodic knowledge checks that reinforce previously learned skills. Some teachers noted that the program sometimes provided their students with a basic exposure to a concept, making instruction easier. For example, one teacher noted that ALEKS Adventure’s “addition and subtraction exposed [students] and so when we did it as a class, they had the basic knowledge. I could build off of that rather than starting from scratch.” However, fewer teachers believed the program strongly supported the deep learning of new skills, with some pointing out a lack of clear instruction or alignment with classroom content. While some students benefited from the structure and repetition, others struggled to understand why they were learning certain skills.

Teachers identified several key ways that the math program addressed their students’ unique needs. The most common theme was individualization, with teachers noting that students could work at their own pace, choose topics based on interest or need, and follow personalized learning paths. This autonomy benefited both advanced learners and those needing extra support. The second most frequent theme was the program’s ability to fill in learning gaps and reinforce prior knowledge, helping students feel more prepared during lessons. Several teachers also mentioned that the program’s design and flexibility kept students motivated and focused. Four teachers said it was especially beneficial for average and above-grade-level students, while others noted its value for all students, grade-level learners needing extra practice, struggling readers strong in math, and gifted students.

Teachers observed several key areas of student progress and growth from participation in the math program. Most notably, students demonstrated significant mastery of math skills, with some advancing beyond their current grade level and showing measurable achievement across numerous topics. This growth was often accompanied by increased motivation and engagement, as students expressed excitement about learning and enjoyed the opportunity to make choices within the program. Many teachers also noted a boost in student confidence, particularly among those who were initially hesitant but gained assurance through their success. Additionally, students became more articulate



about their learning experiences, showing improved ability to reflect on what they learned and identify challenges. While some teachers expressed uncertainty about attributing growth solely to the program due to the presence of other instructional elements, they still acknowledged positive outcomes such as increased retention and enthusiasm for math.

All but two of the teachers said that students had set goals they were working toward within the program, though the level of involvement and structure varied. Typically, students were motivated by visual progress-tracking tools, such as pie charts and their Reveal graph, which they checked regularly and used to guide their work. Several teachers mentioned that students enjoyed seeing their numbers improve and used these visuals to set informal goals, with two stating that their more motivated/successful students tended to be more involved in that process. A few teachers described using teacher-led goal setting, such as aiming for one topic per day or two per week, with students responding positively to these targets. The two teachers who said that goal-setting was not established in their classrooms both reported that at least some of their students showed interest in this area and were beginning to engage with tracking their progress on their own. One of these teachers reported not actively working on goals due to implementation challenges, though a few students still pursued specific skills independently.

All eight teachers indicated that students enjoyed using the program, with comments that included, “They like it and they’ve stayed interested all year,” and “I think all of them are pretty enthusiastic and pretty engaged by it.” Several described their students as very engaged and eager, noting that they often asked to use the program. Others highlighted that students liked the graphics, characters, and kid-friendly design, which contributed to their enjoyment. The majority felt that ALEKS Adventure was engaging to students, with several observing that students looked forward to using it. Six of the teachers described students as focused and/or enthusiastic when using the program. One highlighted the program’s game-like format and its appeal to younger students, while two others emphasized the motivational role of Digit the Dog. However, one teacher observed that initial enthusiasm tended to fade with repeated use, suggesting that the novelty wore off over time. Another teacher pointed out that while most students were engaged, those with attention difficulties or those working on more advanced content sometimes struggled, not necessarily because of the program itself, but due to their individual learning needs.

DISCUSSION

The purpose of the present study was to evaluate the impact of ALEKS Adventure on Grades 1-2 student math achievement in a Pennsylvania school district. A mixed-methods evaluation was conducted in which Aimsweb math scores from BOY and EOY of the 2023-24 and 2024-25 school years were analyzed descriptively to examine trends in achievement gains, and program teachers were interviewed regarding their perceptions of the program.



Math Achievement Gains

Descriptive results showed that Grades 1-2 students made significant gains on the Aimsweb Early Numeracy and Mathematics assessments from BOY to EOY of the 2024-25 school year. Early Numeracy gains averaged 25 points while Aimsweb Mathematics score gains averaged 54 points. Additional descriptive analyses showed comparable gains across all subgroups, with average gains ranging from 23 to 26 points on Early Numeracy and 41 to 56 points on Aimsweb Mathematics.

ALEKS Adventure Usage

Across the entire sample, students averaged approximately 20 hours of ALEKS Adventure usage in the 2024-25 school year. Usage was very similar across grade levels in terms of total program time; however, Grade 2 students averaged more skills learned and total course progress than did Grade 1 students. Measures of total course progress and topics learned were significantly positively associated with spring 2025 Aimsweb math scores, with observed correlations of .27 to .59 in magnitude. These same measures were also generally significantly correlated with BOY to EOY Aimsweb math score gains, although the magnitudes of these correlations were considerably smaller. These patterns suggest that students who were more frequent and successful users were also those who tended to perform higher on the EOY Aimsweb assessment.

Teacher Perceptions

The feedback gathered from eight elementary teachers provides a valuable perspective on the implementation and impact of the program in first and second grade classrooms. A central theme across interviews was the program's ability to engage students meaningfully. Teachers consistently observed high levels of motivation and enthusiasm, particularly among high-achieving students. The program's design elements, such as customizable characters, interactive graphics, and game-like features, were credited with fostering a positive classroom environment and sustaining student interest. However, some teachers noted that engagement could diminish over time or vary depending on individual learning needs, such as attention challenges or difficulty with more advanced content.

Another key strength identified was the program's accessibility. Features like read-aloud instructions, visual scaffolds, and manipulatives enabled students, especially struggling readers, to work independently and build confidence. Teachers appreciated the ease of navigation and the individualized learning paths, which supported a wide range of learners, including those with IEPs and advanced students. Despite these strengths, accessibility concerns were raised for younger students, particularly due to limited verbal instructions and vague hints. To address these gaps, teachers recommended the inclusion of instructional videos and more robust read-aloud features.

The program's data tools, especially pie charts and skill graphs, were widely used to monitor student progress, inform small group instruction, and support IEP documentation and parent conferences. These tools were seen as time-saving and



effective for guiding instructional decisions. However, several teachers expressed concern about the program's alignment with state standards and other platforms, noting that students often progressed quickly without demonstrating deep conceptual understanding. This led to calls for more content per standard, improved skill reinforcement, and stronger curricular alignment.

While five of the eight teachers recommended the program for its engagement, efficiency, and support for diverse learners, three remained neutral. Their reservations centered on the depth of instruction, student readiness for self-guided learning, and the program's fit within existing curricular frameworks. Overall, the program was viewed as a valuable tool for practice and retention, offering exposure to key concepts and supporting classroom instruction. Teachers reported that students demonstrated measurable growth, increased motivation, and a greater ability to reflect on their learning.



APPENDIX A: Teacher Interview

Teacher Interview Protocol

1. What is the main purpose or way ALEKS Adventure supports your instruction?
2. If not addressed above: How are you currently implementing ALEKS Adventure?
For example: are students using it during:
 - WIN time
 - Choice boards
 - Station rotation
 - Something else?
3. What devices do students use to access ALEKS Adventure? (iPads, Chromebooks...)
 - a. Does each student have their own device, or do they share?
 - b. Do all students use ALEKS Adventure at the same time? If not, how are the groups or rotations structured?
 - c. Is access to devices or wifi ever a barrier to implementing ALEKS Adventure as you would like?
4. About how long is a student's typical session in ALEKS Adventure? (10 min, 15 min etc)
5. To what degree can students use ALEKS Adventure independently?
 - a. [if applicable] What kinds of support do they require to use it?
6. How does ALEKS Adventure address your students' unique needs?
7. How do you feel ALEKS Adventure impacts students' confidence and mastery of math concepts?
8. How is ALEKS Adventure helping students to learn, practice, and retain concepts?
9. How helpful are the built-in scaffolds (hints, visual aids, manipulatives) for students who are struggling to grasp a concept?



10. Do you feel that ALEKS Adventure is engaging to students, i.e. do they look forward to using it, and can they stay focused on it throughout their session?
11. What progress or growth have you observed from students working in ALEKS Adventure?
 - a. Do students have goals they are working toward? If so, how is the student involved in setting or tracking progress toward goals?
12. Are there any students you think ALEKS Adventure is particularly beneficial for?
13. Do you have students who are not motivated or engaged by ALEKS Adventure?
 - a. If so, how would you describe these students – are they low or high performers? What unique needs do they have?
14. Do you use the data and reports in ALEKS Adventure? If so, how?
15. Is there anything about ALEKS Adventure that surprised you?

To Be Asked If Time Permits

16. To what degree do students enjoy using ALEKS Adventure math?
17. Would you recommend this program to other educators? Why or why not?
18. What do you see as the strengths of ALEKS Adventure Math?
19. What suggestions would you have to improve the program?
20. Is there anything else you would like to add?
21. Did ALEKS Adventure replace something that you were previously using or doing? If so, what?
22. Do you use a core math program?
23. Do you use other math programs (core program, intervention program, other digital supplemental tools or apps) in your classroom?
 - a. What are they and what purpose(s) do they serve?