SylvanSync:

Research Snapshot

July 2013

Submitted to

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Rockman et al is an independent evaluation, research, and consulting firm focusing on studies of education, technology, and media. Rockman works with preschool, K-12, postsecondary, and adult educational institutions in formal education. It also works with broadly educational projects having a wide community or consumer audience. In addition to research on core education initiatives, such as school reform, school technology, online learning, and teacher professional development, the company conducts research and evaluation for television and radio series, children's video programs, websites and social media initiatives, and museum programs and partnerships.

The staff of Rockman et al includes researchers with advanced degrees in education, cognitive science, communications research, child development, research design, educational technology, psychology, and the humanities. Since 1990, Rockman et al has conducted hundreds of evaluations and research studies and has often served as the external evaluator for grant-funded projects supported by foundations, state and federal agencies, and private industry.

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Overview

Over the last several months, Sylvan Learning has reached some important milestones in the development of the SylvanSync digital teaching platform. The platform now includes new reading and math academic content, which is mapped to the Common Core State Standards, and uses Renaissance Learning's STAR Reading and Math Enterprise tests to determine a starting point for instruction. This version of SylvanSync also employs Sylvan's new adaptive backbone, which is based on empirically valid learning progressions. Sylvan created these progressions by mapping the new content to learning progressions originally developed by Renaissance Learning—based on data from millions of students who took the STAR tests as benchmark tests of their progress toward state test proficiency—and by carefully studying the most logical path students take in acquiring competency in reading and math.

This research report shares the results from the field trial of the SylvanSync assessment release described above. The research team collected data between November 2012 and May 2013, from 19 National Learning Centers in Baltimore and Minneapolis. Some 319 students enrolled in grades K–8 in SylvanSync math and reading programs made up the study sample. The research documented their academic growth using multiple measures designed to explore the impact of instruction facilitated by the SylvanSync platform.

As indicated in other SylvanSync research reports, Sylvan is committed to what the U.S. Department of Education calls "evolved thinking" about educational research and development. This approach involves ongoing testing and evaluation of new approaches, which the department recognizes as being necessary in order to realize "the full potential of digital learning."[1] As Sylvan Learning continues to heed this call, it will publish its findings and use its data to further improve and refine its offerings to students and their families.

Traditionally, Sylvan Center staff have reported student academic performance and progress as a "Grade Level Equivalent (GLE)." Unfortunately, GLE has frequently been misunderstood by parents as well as by center staff. To eliminate the problem, Sylvan has created a new metric that actually means what parents believed GLE to mean. The new metric, Grade Level Ability (GLA), is a criterion-referenced metric that estimates a student's

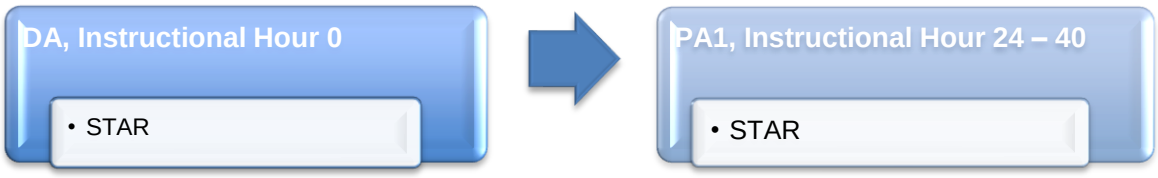
[1] See "Expanding Evidence Approaches for Learning in the Digital World," in Draft from the U.S. Department of Education, Office of Educational Technology (2012), i-ii.

ability to master skills at a specific grade level. The criterion that GLA refers to is the difficulty level of the content, mapped to a learning progression that is expressed as a scaled score/GLA continuum. Unlike GLE, GLA is not calibrated on an equal interval scale because there is no precise, equal distance between each point from .0 to .9. Rather, these points indicate periods in the school year. For example, students with a .0, .1, .2, are able to master content typically taught at the beginning of that grade; students with a .3 to .6 can master content typically taught at the middle of the grade; and those with a .7 to .9 can master content typically taught at the end of the grade.

Study Design and Data Analysis

The National Learning Centers participating in the field trial administered the STAR reading or math diagnostic assessment (DA) to students upon enrollment or at the 0 instructional hour, and an initial progress assessment (PA1) when students completed from 24–40 hours of instruction. (See Figure 1.)

Figure 1. Design of the 2013 Study and SylvanSync Data Collection



The research team examined students' academic growth in multiple ways. We looked at gains from DA to PA1, using both scaled scores and the new criterion-referenced GLA metric. As part of the field trial, we measured students' progress on the GLA continuum, comparing the content they were able master at DA to what they could master at PA1.

We also compared actual to expected gains, using growth norms developed by Renaissance Learning to index the growth of students from different grades and with different levels of initial performance on the STAR Reading and Math assessments. These growth norms, projected for students in grades one through twelve, provide a method of comparing a student's measured growth over a period of time to growth made by students of a similar grade and achievement level. In the field trial, we used these growth norms to compare the growth that Sylvan students made to that made, over similar periods, by students who are at the same grade and ability level but who are not enrolled in a Sylvan center. We also looked at how the percentages of students making gains compared to the percentages of those exceeding projected gains.

To examine actual vs. projected or anticipated growth through a different lens, we also analyzed gains based on students' initial GLA scores, and three categories of incoming performance—below, at, and above grade level. As with the analysis using growth norms, we also compared, in reading and math, percentages of students making gains to percentages of those scoring higher than expected.

The report shares overall results from each analysis by subject, and, in the text, figures, and reports of statistical significance, disaggregates results by subject and grade band (K–2 or 1–2, 3–5, and 6–8).

Study Samples

The overall sample for the STAR data included a total of 319 kindergarten through eighth-grade students enrolled in 19 Sylvan centers in Baltimore and Minneapolis; 149 of the students were enrolled in SylvanSync reading programs, and 170 in SylvanSync math. There were too few students in grades 9–12 to warrant any meaningful analyses, so that grade band was not included in the study or in the results reported here.

The grade bands and sample sizes vary somewhat for the individual analyses and results. In math, for example, the grade band for the youngest students includes those in kindergarten through grade 2. In reading, however, the grade band includes grades 1 and 2 only because there were no kindergarteners in the reading sample. No kindergarten students are included in the comparisons of expected and actual growth because growth norms have not been established for those youngest students. Each figure in the report indicates the numbers of students included in the analysis and represented by the results. (See Table 1 below for the breakdowns by grade band and subject, and by the basic gain analyses and analyses using growth norms.)

To be included in the analysis, students also had to have two assessments: a diagnostic assessment (DA) administered upon enrollment, and an initial performance assessment (PA1) administered between the 24- and 40-session mark. As part of our verification of the sample, we dropped students who had two initial assessments rather than a DA and PA, and those whose DA and PA tests lasted less than four or more than 40 minutes.

Around 60% of the students in the study, or 86 of the 149 (58%) reading students and 99 of the 170 (58%) math students, were recruited to take part in the field trial of the assessment release version of SylvanSync. Recruited students were students who signed up for free Sylvan service in the Baltimore area. Families were offered free services in return for agreeing to bring their children four times a week for about a nine-week period. Initially the parents gave the center a $500 deposit, which was refunded when their child completed 36 sessions. To ensure that these students formed a legitimate sample, we ran tests comparing scale scores at DA or PA between recruited and non-recruited students. Tests for significance showed no statistically significant differences between the groups.

Table 1. Study Sample

Grade Band	Subject	Number of students with both a DA and PA1 score	Number of students included in expected vs. actual analyses (Grades 1–8)
All Grades	Reading	149	149
	Math	170	162
K–2nd	Reading (grades 1–2 only)	33	33 (grades 1–2 only)
	Math	40	32 (grades 1–2 only)

3rd–5th	Reading	82	82
	Math	68	68
6th–8th	Reading	34	34
	Math	62	62

Table 2 shows the mean number of sessions by grade band and subject, along with the overall mean. It also shows the average duration (in minutes) of the tests, at DA and PA1, and the standard deviations from the means, again overall and by grade band and subject.

Table 2. Study Sample with Means and Standard Deviations by Grade Bands and Subjects

Grade	Subject	N	Mean Number of Sessions	SD Number of Sessions	Mean Number of Weeks DA★PA1	SD Number of Weeks DA★PA1	Mean Number of Sessions Per Week	SD Number of Sessions Per Week	Mean Test Duration at DA (in minutes)	SD Test Duration at DA (in minutes)	Mean Test Duration at PA1 (in minutes)	SD Test Duration at PA1 (in minutes)
All	Reading	149	30.6	2.4	9.1	2.1	3.5	0.7	17.2	5.4	18.1	5.4
	Math	170	30.4	2.8	9.1	2.2	3.5	0.8	19.2	8.1	20.8	8.3
K–2	Reading	33	30.1	1.7	8.8	2.3	3.6	0.8	16.4	5.1	17.5	4.4
	Math	40	30.2	2.9	8.9	2.5	3.6	0.9	12.1	6.0	14.6	6.4
3–5	Reading	82	30.8	2.6	9.2	1.9	3.4	0.6	17.4	5.7	18.2	5.5
	Math	68	30.4	2.6	9.3	2.2	3.4	0.8	19.8	6.5	22.1	7.4
6–8	Reading	34	30.5	2.7	9.0	2.3	3.6	1.0	17.7	5.1	18.4	6.0
	Math	62	30.6	2.9	9.0	2.0	3.4	0.6	23.3	8.0	23.5	8.1

Field Trial Results — the STAR Reading and Math Assessments

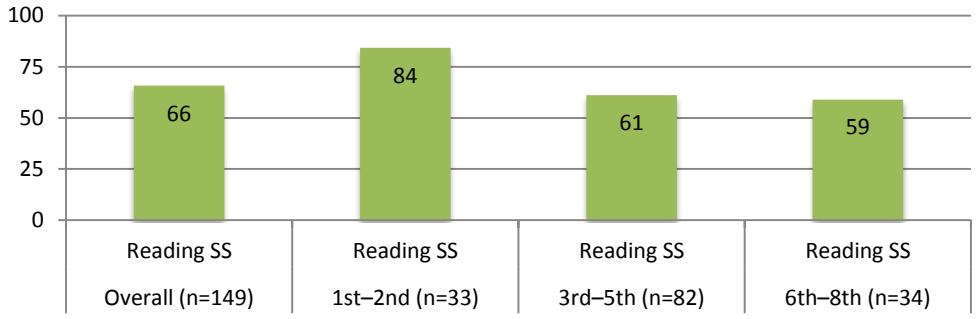
Overall, results from the field trial were positive and consistent: Both scaled score and grade level ability results showed that, across grade bands, SylvanSync students made gains on the STAR Reading and Math assessments from the diagnostic assessment (DA) to the first performance assessment (PA1). For most grade bands, students' actual growth exceeded expected growth, and scores rose regardless of students' incoming performance. With the exception of a few results for 6–8th grade students, the differences were statistically significant.

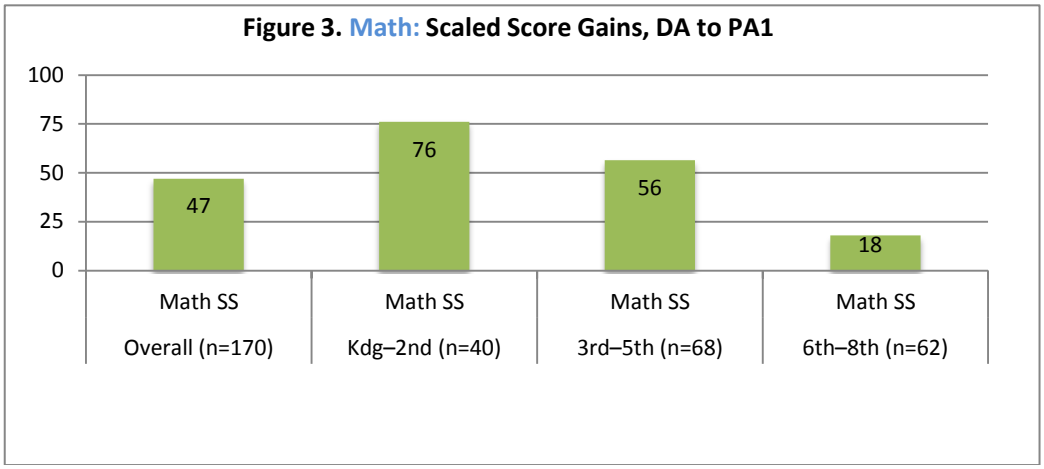
Scaled Score Gains

Scaled score (SS) results show increases for SylvanSync students, in both subjects and across grade bands. In **reading** (N=149), the overall or average SS gain was 66 points. **Math** gains (N=170) were slightly lower, with an average SS gain of 47 points. In both subjects, overall differences were statistically significant. *(NOTE: The grade band for the youngest students in reading is 1–2; in math, K–2.)* Further breakdowns show that:

- In **reading**, the youngest students (grade band 1–2) posted the highest SS gains, at 84 points. Gains in the two other grade bands were somewhat lower, but similar: students in grade band 3–5 made a 61-point gain; those in grade band 6–8, a 59-point gain. (See Figure 2.)
- In **math**, the youngest students (grade band K–2) again made the greatest gains, posting a 76-point increase. Students in grade band 6–8 made the smallest gain, at 18 points. (See Figure 3.)
- All DA to PA1 grade band differences were statistically significant.

Figure 2. Reading: Scaled Score Gains, DA to PA1



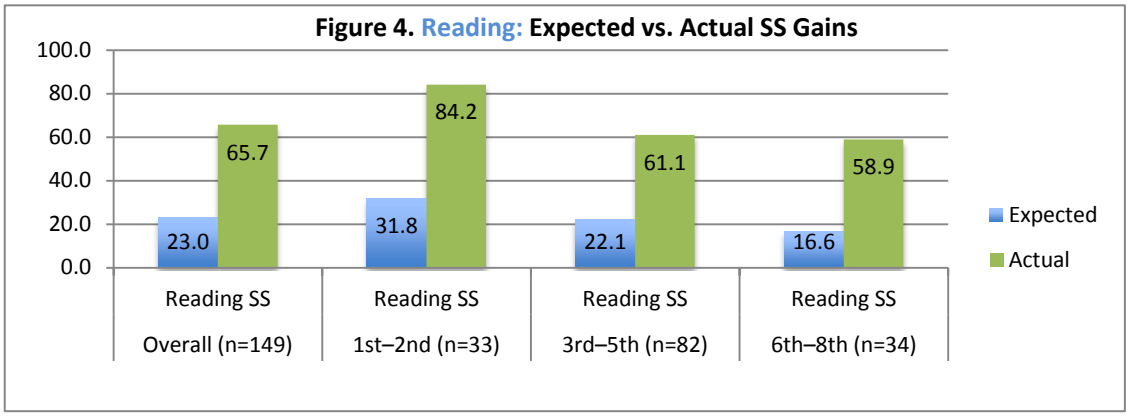


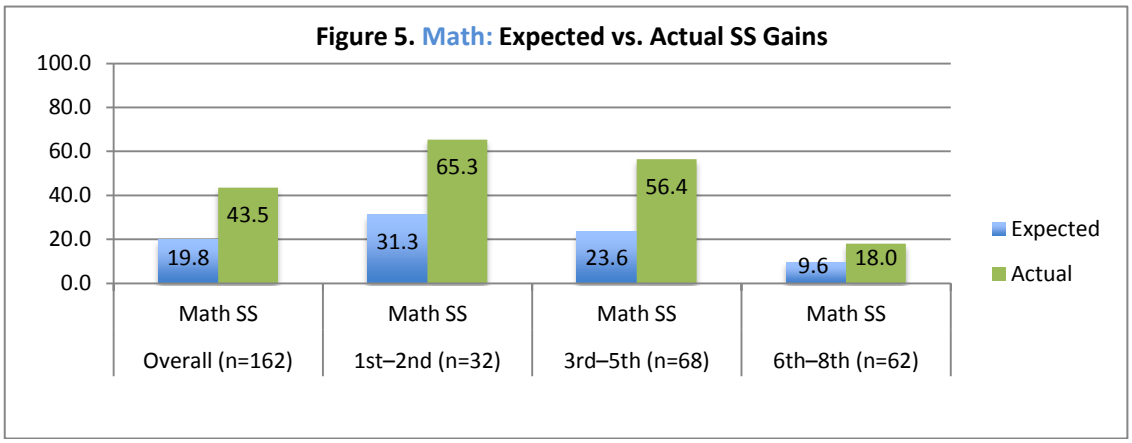
Expected vs. Actual Scaled Score Gains

As noted above, the use of Renaissance Learning's growth norms gave Sylvan an opportunity to compare SylvanSync students' growth to that of students in the same grade and at the same ability level, over similar periods of time. For the field trial, we used Renaissance Learning's "moderate" weekly growth estimates as the "expected" measure. We conducted two sets of analyses: one to see how students' actual growth compared to their expected growth, and another to see how many students making gains were exceeding expectations.

The first set of comparisons showed that students' *actual* growth consistently outpaced *expected* growth. With the exception of the **math** gains for the 6–8 band, all differences were statistically significant. *(NOTE: The youngest grade band spans grades 1–2 because there are no growth norms for kindergarten.)*

- The differences in expected vs. actual scale score gains in **reading** were, across grade bands, wider, and the actual performance levels, higher.
- The highest gains, and largest differences, emerged in the **reading** score gains for the youngest students, grade band 1–2, with a 52.4-point difference. For all grade bands, students' actual growth in **reading** was almost 3 times what would have been expected. (See Figure 4.)
- In **math**, actual gains and point differences were smaller, with actual gains approximately double that of expected ones. Overall, the expected gain was 19.8 points (similar to the 23.0 expected gain in reading), but the actual gain was 43.5 points. Differences were similar for the 1–2 and 3–5 grade bands, with 34- and 32.9-point differences. Expected vs. actual gains for the 6–8 grade band were modest, at 9.6 vs. 18.0 respectively. (See Figure 5.)





In our second analysis, we compared the percentages of students making scaled score gains to percentages of students scoring higher than expected, based on growth norms. Margins of difference were fairly narrow—indicating that in both **reading** and **math**, across grade bands, the majority of Sylvan students making gains were exceeding expectations.

- In the overall **reading** scores, there was a 10 percentage-point difference: 124 or 81% of the students made SS gains, and 109 or 71% exceeded expected gains. (See Figure 6.)
- Among the 162 students in the overall **math** sample, 130 or 77% made SS gains; 109 or 60% exceeded expectations—a wider difference than for reading but still a majority of students. (See Figure 7.)
- In both **reading** and **math**, percentages of students making gains were highest for the youngest group, in grade bands 1–2, both at 91%. Percentages exceeding expected gains were highest for this groups as well, but the margin of difference was smaller in **reading** than in **math**, at 12 vs. 19 points. Percentages were similar for the 3–5 grade bands in both subjects, and closest for students in the 6–8 grade band in **reading**, with those making gains at 74%, and those exceeding expected gains at 71%.

Figure 6. Reading: % Making Gains vs. % Exceeding Expected SS Gains

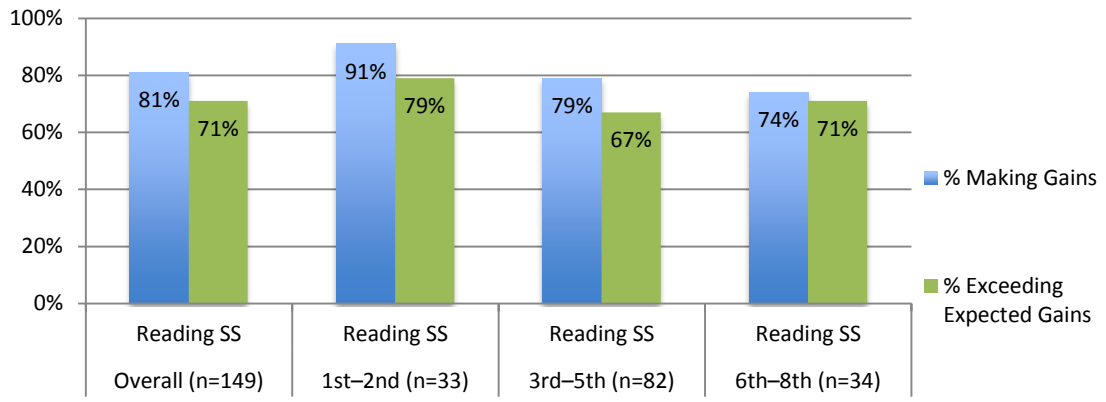
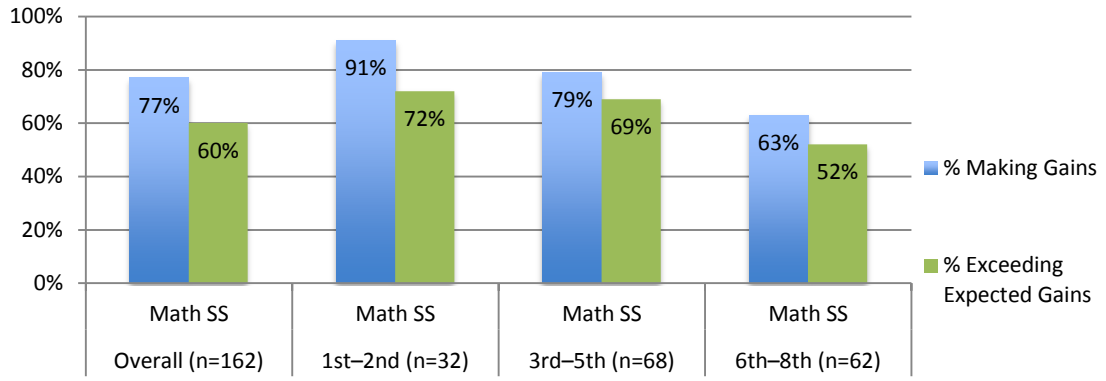


Figure 7. Math: % Making Gains vs. % Exceeding Expected SS Gains



Gains in Grade Level Ability

The field trial also explored students' performance based on changes in Grade Level Ability (GLA), the new metric developed by Sylvan to gauge students' ability to master the skills typically taught at various points in the school year. Results again showed gains, across subjects and grade bands.

- Gains in **reading** were fairly uniform, with gains of over half a grade level, and 0.7 overall. Students in grade band 1–2 made close to a full grade level's gain, at 0.9; gains were at 0.6 for grade bands 3–5 and 6–8. (See Figure 8.)
- **Math** students in grade band 3–5 showed a full grade level's growth (1.0). Overall, GLA gains in **math** were a tenth of a point lower than overall reading scores, or 0.6 vs. 0.7. (See Figure 9.)
- Except for the 0.3 gain in **math** for the 6–8 grade band, all gains were statistically significant.

Figure 8. Reading: GLA Gains from DA to PA1

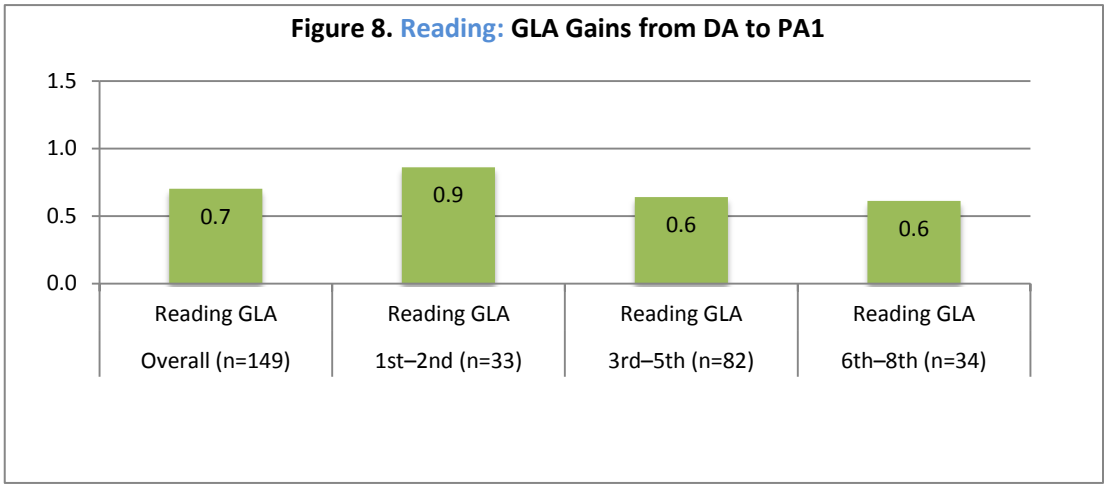
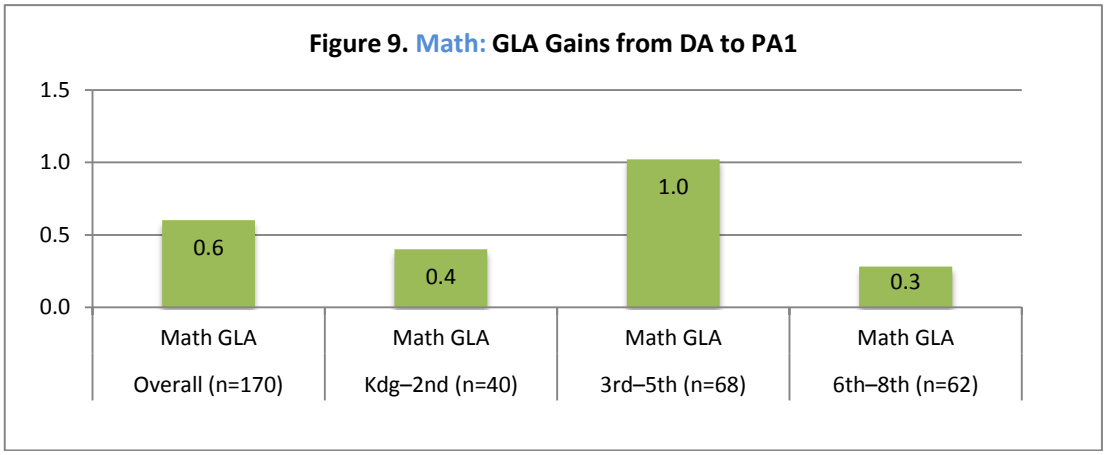


Figure 9. Math: GLA Gains from DA to PA1



Gains Based on Incoming Performance

Sylvan also uses the GLA metric to examine how students' starting level affects their academic growth, which provides a different lens through which to view gains. Using Sylvan's GLA categories for incoming performance, which places students below, at, and above grade level, we analyzed both scaled score and GLA gains, DA to PA1, in reading and math, and compared expected to actual gains.

Again, results were positive, consistent, and significant—indicating that students were making gains regardless of incoming performance. Overall, students made an average SS gain of 66 points in **reading**, and 47 points in **math**, and GLA gains of 0.6 and 0.7. As with the earlier comparisons (see pages 7–8), most students making gains were exceeding expectations.

Scaled Score Gains Based on Incoming Performance [OR Incoming GLA]

- In **reading**, students starting *below grade level* made the most striking SS gains, at 84 points; those starting *at grade level* posted a 55-point gain, and those *above grade level*, a 41-point gain. (See Figure 10.)
- **Math** gains were generally smaller: students starting *below grade level* made SS gains of 56 points; those *above grade level*, 33 points. The exception was students entering *at grade level*: the **math** group posted slightly higher gains than the **reading** group, at 63 points. (See Figure 11.)
- All results were statistically significant.

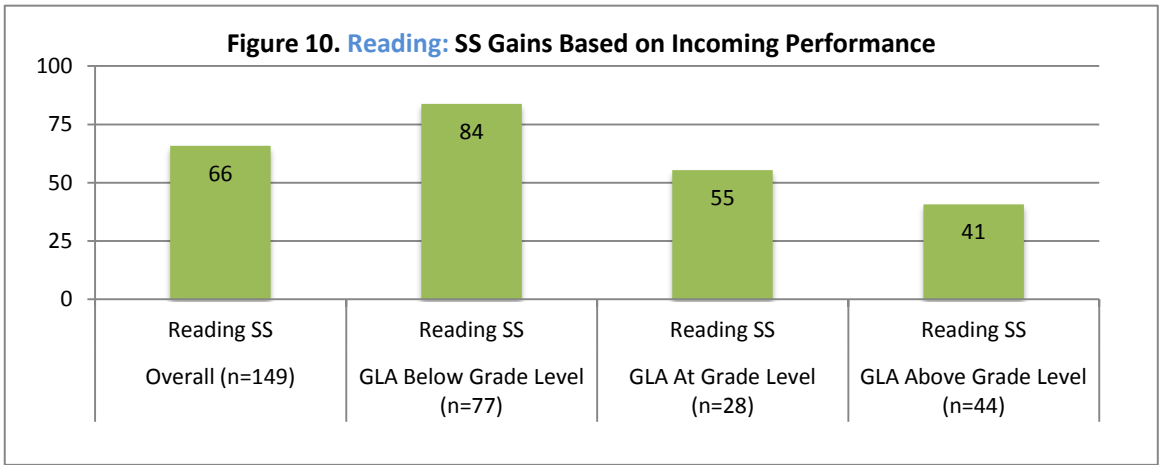
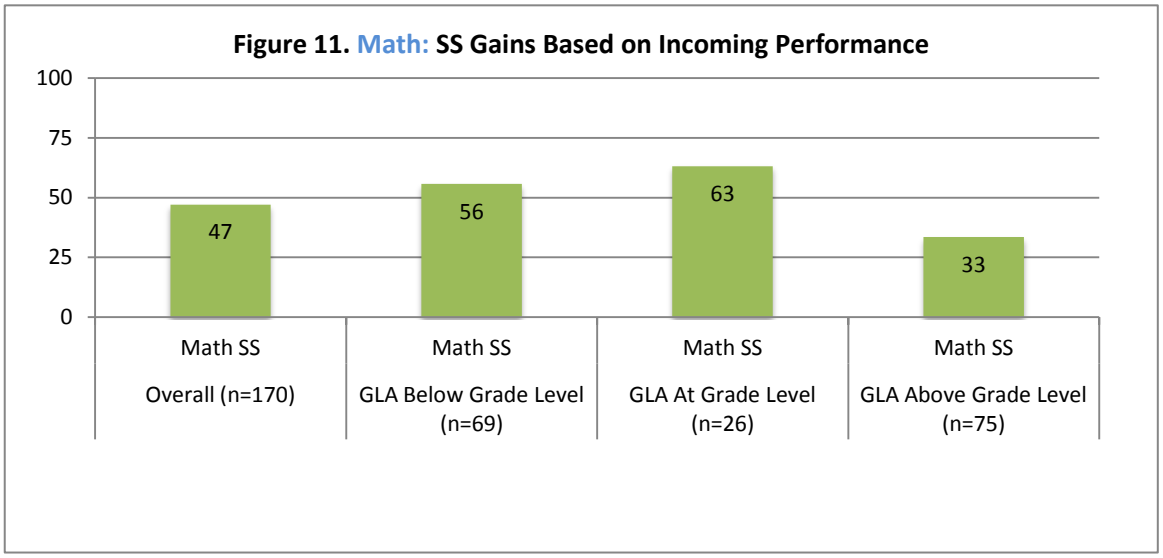
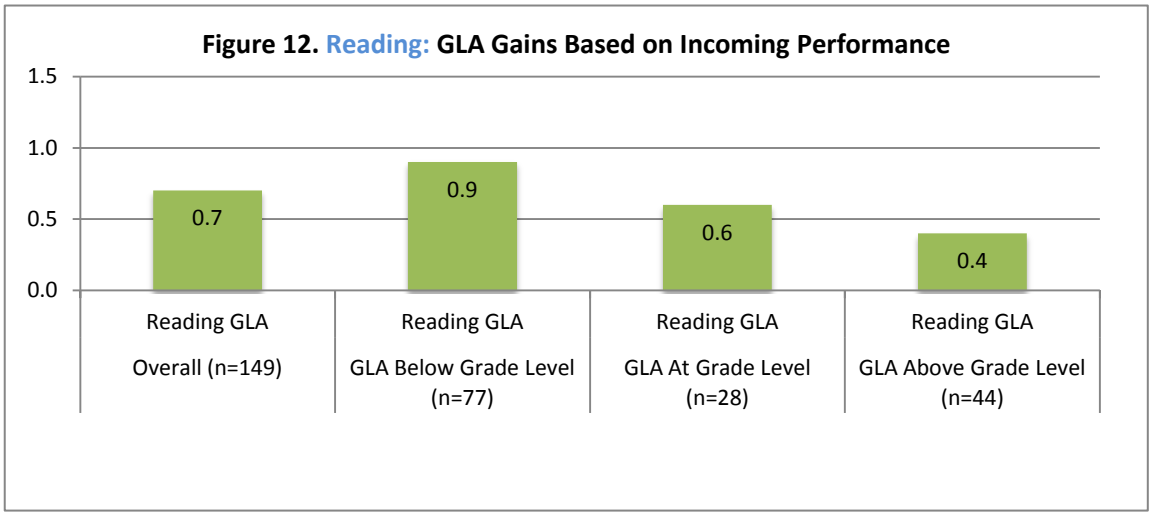


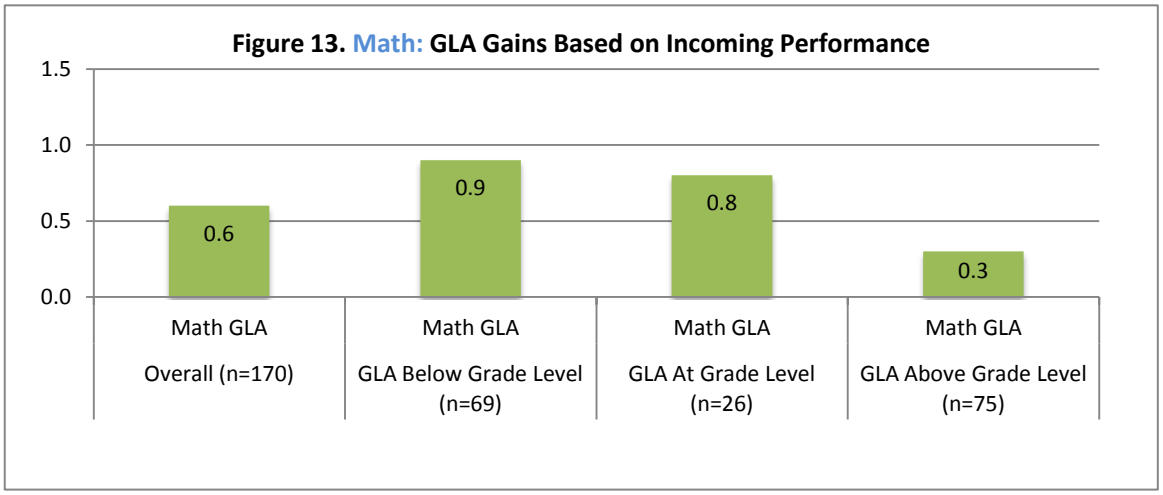
Figure 10. Reading: SS Gains Based on Incoming Performance



Grade Level Ability Gains

Like the SS gains, GLA gains based on incoming performance also indicated that students posted gains no matter where they started: Overall gains in **math** and **reading** were similar, at 0.6 and 0.7, respectively. For both subjects, gains were greatest (both close to a 1-point GLA increase) among students initially performing *below grade level*, and smallest for those performing *above grade level*. All gains were statistically significant. (See Figures 12 and 13.)



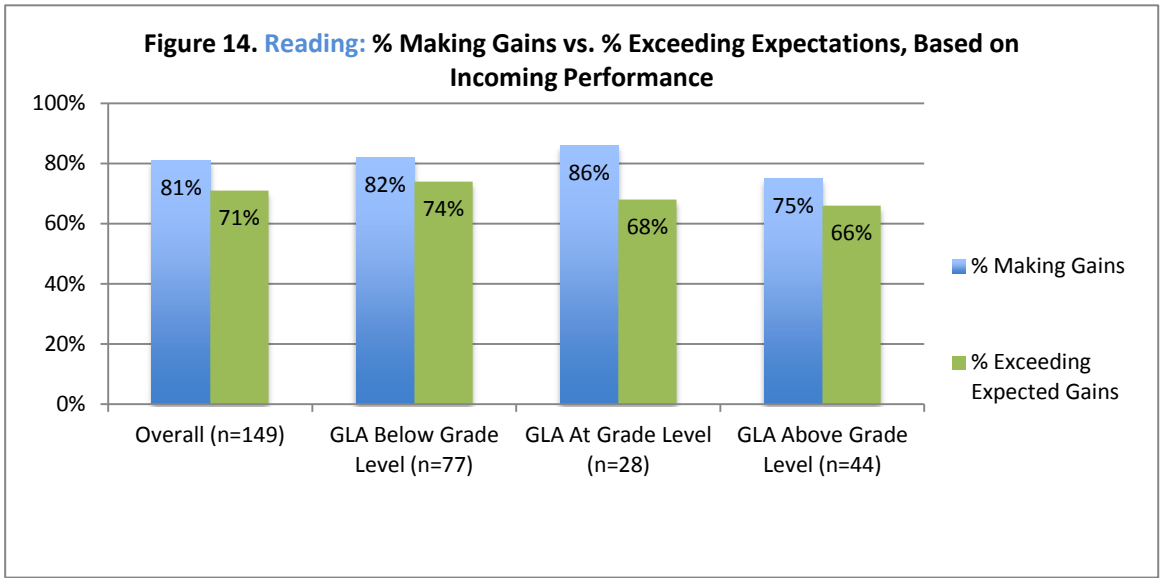


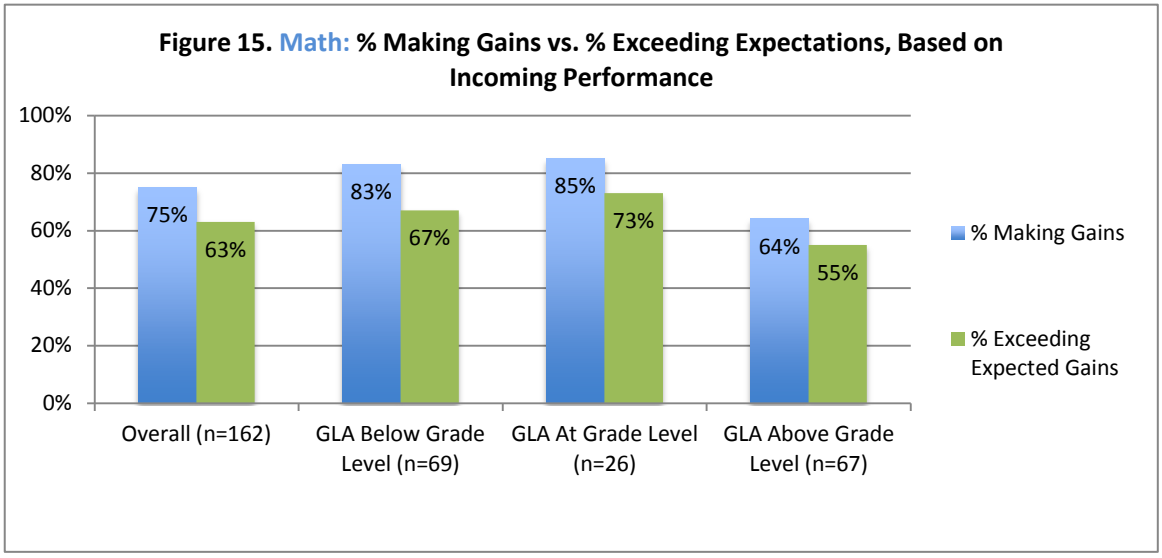
Percentages Making Gains vs. Percentages Exceeding Expectations

Again using GLA to gauge incoming performance, we compared the percentages of students *making* scaled score gains to the percentage of those *exceeding* expected gains—as a confirmatory or companion analysis for the comparisons described earlier (see p. 9).

Averages, score differentials, and breakdowns by grade bands showed very similar patterns for **reading** and **math**. Regardless of their incoming performance, high percentages of students who made gains were exceeding expectations. The overall percentages using the GLA metric were quite similar to the percentages based on the projected growth norms: In **reading**, both calculations showed 81% of the students making gains and 71% exceeding expectations. In **math**, the calculation based on growth norms showed 77% of the students making gains and 60% exceeding expected gains; GLA figures were 75% vs. 63%.

- Overall, percentages of students exceeding expected gains were within 10–12 percentage points of those making gains. (See Figures 14 and 15.)
- The gaps were wider—closer to 20 percentage points—for students *at grade level* in **reading** (68% vs. 86%) and *below grade level* in **math** (67% vs. 83%).
- The margins narrowed to 9 points for students whose incoming performance was *above grade level*, in both **reading** and **math**. These were the only differences that were not statistically significant.





Conclusions and Next Steps

The results from the field trial indicate that Sylvan is on the right path with SylvanSync as a platform to support a highly personalized approach to teaching and learning in its retail centers. Sylvan is pleased with the results, and can deploy SylvanSync to its remaining centers nationally and internationally with the confidence that it can now better serve the educational interests of its students and their parents.

Although evidence points to the fact that the SylvanSync technology is effectively supporting teaching and learning in the Sylvan environment, Sylvan also recognizes that this research study is just a first step toward truly understanding how best to leverage technology in service of a highly personalized learning experience. Sylvan's next step is to use the vast amount of data it now has available to continuously improve both the

platform and the program implementation. To this end, Sylvan has launched a data gathering and analysis project to ensure that Sylvan staff across the company have both the actionable data and the requisite knowledge and skills to improve their educational products and services. Specifically, Sylvan is pursuing the following steps:

- Centralizing the process for data gathering and analysis of student data so the data is actionable.
- Creating systems and processes for effectively sharing this data with personnel across the company.
- Empowering and enabling individuals throughout the company to use the data for continuous improvement, which includes improving the technology, updating the content, enhancing the teacher training, and refining quality assurance measures in ways that will ensure that Sylvan families are receiving world-class educational services.
- Engaging Rockman et al to conduct regular research reports to help explore trends and myriad questions, the answers to which will inform data-driven decisions and improvements.

In addition, Sylvan is actively seeking opportunities to partner with school districts to test the effectiveness of this technology in schools. These efforts include delivery of the software, and, in some cases, hardware; training of teachers; careful monitoring of program implementation; and ongoing reporting to stakeholders. Sylvan will also enlist the independent research services of Rockman et al to document the impact of SylvanSync on student outcomes as measured by Sylvan's assessments and by district and state measures, including but not limited to standardized tests, course grades, attendance, and behavioral reports.