

# Associated Impact of *StudySync* on the Reading and English Achievement of High School Students in a Midwestern High School

## *About the Study*

This study examined the reading and English achievement of high school students receiving instruction using either *StudySync* or ‘business as usual’ on three measures of achievement: the ACT Aspire, the ACT, and STAR Reading. Students were assessed during their year of *StudySync* instruction from Fall of 2017 to Spring of 2018. Scores from prior years (2015-2016 and 2016-2017 school years) were available for comparison.

The site selected for this study was a high school located within a school district in the upper Midwest. The district houses 9 schools: 5 elementary schools, 3 middle schools, and 1 high school. During the 2017-2018 school year, the district served 1,307 students in grades K-12. District-wide, roughly 52% were of limited socio-economic status, 15% were English Language Learners, and 14% were identified with special educational needs (see Table 1). About 75% of students were Caucasian, 13% were African American, and 4% were Hispanic. The district’s sole high school served 378 students ranging in grades 9 through 12. Of these students, roughly 40% were of limited socio-economic status, 15% were English Language Learners, and 14% were identified with special educational needs. Roughly 78% of students were identified as Caucasian, 13% were of African American ethnicity, and 7% were of Hispanic ethnicity. During the 2016-2017 school year, roughly 35% of students district-wide were considered proficient or above on the ACT assessment in English Language Arts.

Table 1

*Student Demographics by District and School*

Demographic	District	School
Low SES	52%	40%
English Language Learners	15%	15%
Special Education	14%	14%
African American	13%	15%
Caucasian	75%	78%
Hispanic	7%	4%

At the start, 211 students participated in the study: 74 students were in the 9<sup>th</sup> grade, 53 students were in the 10<sup>th</sup> grade, 49 students were in the 11<sup>th</sup> grade, and 35 students were in the 12<sup>th</sup> grade. It should be noted that more complete data was available for students in the 9<sup>th</sup> and 10<sup>th</sup> grades, followed by 11<sup>th</sup> grade and finally, 12<sup>th</sup> grade. Nearly half of scores on the 2018 Spring STAR assessment was missing for 12<sup>th</sup> grade students, and student growth percentile (SGP) scores were missing for many 11<sup>th</sup> grade students. All analyses reported here were based on available information.

## Measures

### *STAR Reading*

*STAR Reading* is a computer-adaptive reading comprehension test, which automatically adjusts the difficulty of test items based on the skill level of the student. Provided scores on the STAR include scaled scores, percentile ranks, and student growth percentile (SGP) scores. Student growth percentiles (SGP) consider student performance *across* years and compare the performance of student's current achievement to that of students with similar achievement on previous assessments. Scaled scores are vertically-scaled scores, which permit students' progress to be monitored across grades and across several test administrations. STAR Reading scaled scores range from 0 – 1400, with higher scores indicating higher performance in reading. Percentile ranks compare a student's performance to that of a nationally normed sample of students and indicate the percentage of students scoring at or below a given percentile score. For example, 'Student A' with a percentile rank of 73 means that 73 percent of students scored lower than Student A on that particular assessment. Using the same example for percentile ranks, 'Student A' with an SGP of 73 means that Student A scored higher than 73 students with similar achievement on previous assessments. Higher values suggest higher levels of growth, compared to students with similar score histories. The STAR was administered to students in the Fall, Winter, and Spring of each year.

### *ACT Aspire and ACT*

The ACT Aspire (ACT, Inc., 2017) and the ACT are vertically-scaled, summative assessments designed to measure student achievement in English, reading, mathematics, science, and writing, as well as progress toward college and career readiness standards. The ACT Aspire is typically administered to students in the 9<sup>th</sup> and 10<sup>th</sup> grades and the ACT is typically administered to students in the 11<sup>th</sup> and/or 12<sup>th</sup> grades. Scores on the ACT Aspire are two-digit scaled scores ranging from 1 – 36 and are provided for each subtest and for the test as a whole. Gain scores represent the difference in score from one year to the next and are calculated for all subtests with the exception of the Writing subtest, on which performance is scored using a rubric. Student growth percentiles (SGP) indicate the student's current achievement compared to students with similar prior achievement. For example, a student with an SGP of 80 indicates that the student showed more growth than 80% of peers with similar levels of achievement. On the ACT Aspire and ACT, students with SGPs lower than 25 are considered to exhibit 'Low' growth. SGPs between 25 and 75 represent 'Average' growth, and SGPs above 75 represent 'High' growth (ACT Aspire, 2017, p. 14.5).

## Data

Three years' worth of STAR data was provided for students: Fall, Winter, and Spring benchmark scores during the 2017-2018 school year when *StudySync* was implemented, and Fall, Winter, and Spring benchmark scores for the two years prior to implementation (during the 2015-2016 and 2016-2017 school years). Given the multi-year span of the study, there were instances in which students had missing data and some analysis could not be computed. On the STAR assessment, students with two of three missing benchmark scores for a particular year were eliminated from that analysis. Scores for students with one missing benchmark score were estimated using multiple imputation. On the Spring, 2018 benchmark assessment of STAR reading, mean scores are not reported for 11<sup>th</sup> and 12<sup>th</sup> grade students, due to the amount of missing data on that particular administration (15 of 35 scores were not reported for 12<sup>th</sup> graders). As of this writing, 2017-2018 scores on the ACT were not provided for 12<sup>th</sup> graders, and SGP scores were missing on some measures for 11<sup>th</sup> graders.

Table 2 highlights available scores on the ACT Aspire and the ACT based on students' grade level during the 2017-2018 school year. Students who were in the 9<sup>th</sup> grade during the 2017-2018 year were administered the ACT Aspire. Students who were in the 10<sup>th</sup> grade during the 2017-2018 school year were administered the ACT Aspire and were also administered the ACT Aspire during the previous school year (2016-2017) while 9<sup>th</sup> graders. Students in the 11<sup>th</sup> grade during the 2017-2018 school year were administered the ACT and were administered the ACT Aspire during the previous school year (2016-2017) while 10<sup>th</sup> graders. Data for 12<sup>th</sup> grade students included scores on the 2016-2017 administration of the ACT.

Table 2

### *Available ACT Aspire and ACT Test Scores by Grade Level*

	16-17 ACT Aspire	17-18 ACT Aspire	16-17 ACT	17-18 ACT
Grade Level				
9	No	Yes	No	No
10	Yes	Yes	No	No
11	Yes	No	No	Yes
12	No	No	Yes	No

Based on the available data, examinations of student performance before implementation of *StudySync* and after implementation of *StudySync* were made within and across cohorts. That is, the scores for the *same* group of students were compared when possible, and the scores for *different* groups of students who were of similar grade level were compared.

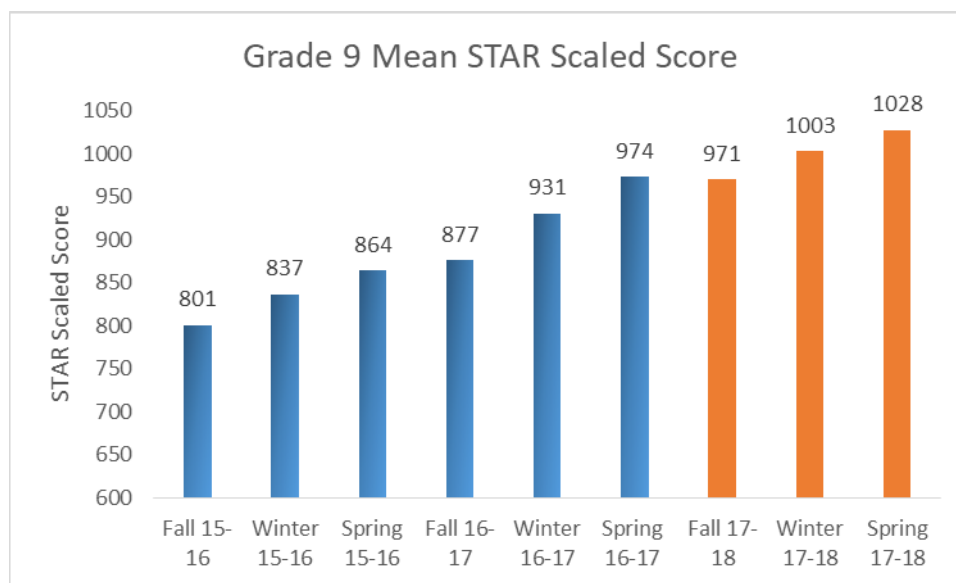
Across all grades, the grade levels reported here represent students' identified grade level during the 2017-2018 school year. So, students identified as 9<sup>th</sup> graders were in the 9<sup>th</sup> grade during the 2017-2018 school year. Therefore, scores on assessments during the 2017-2018 school year

reflects their performance as 9<sup>th</sup> graders. This same group of students were 8<sup>th</sup> graders during the 2016-2017 school year; therefore, scores on any 2016-2017 assessments reflect their performance as 8<sup>th</sup> graders. Finally, 2015-2016 scores for this particular cohort of students reflects their performance as 7<sup>th</sup> graders.

## Results: STAR Reading

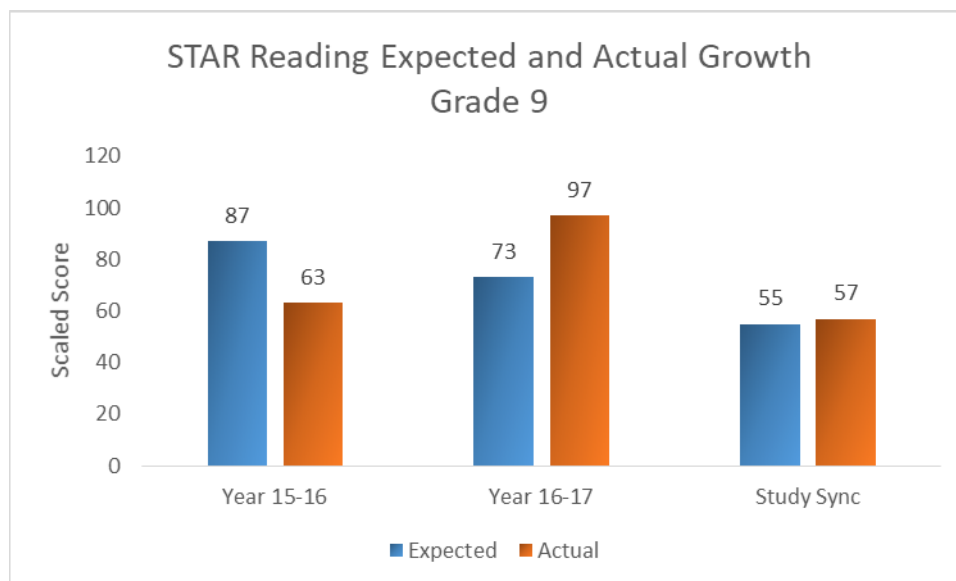
*How did students perform on the STAR Reading Assessment, within and across cohorts?*

This section illustrates the performance of students on the STAR Reading assessment. First, the mean scaled scores are provided on the Fall, Winter, and Spring administrations of the STAR during the year of *StudySync* implementation (2017-2018 school year) and two years prior. Additional analysis, including the median percentile score and percentage of students meeting benchmarks are presented.



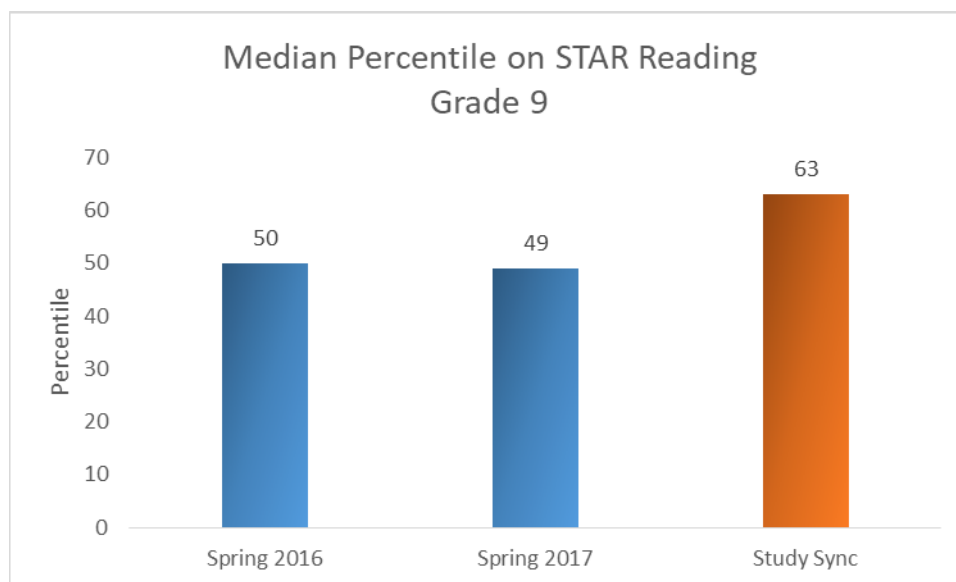
*Figure 1.* Mean STAR scaled scores for 9<sup>th</sup> grade students. (Blue represents scores before *StudySync* usage. Red indicates Year 1 *StudySync* implementation.)

Figure 1 highlights the mean scaled score on the Fall, Winter, and Spring STAR benchmark assessment for the same group of 9<sup>th</sup> graders. The mean scores reported here reflect the mean of imputed values (as some variables were missing). Recall that scores during the 2015-2016 and 2016-2017 school years reflect student performance prior to *StudySync* implementation and scores during the 2017-2018 school year reflect student performance during the first year of *StudySync* implementation. To illustrate, the mean scaled score on the Fall administration of the STAR and during the 2015-2016 school year (when these students were 7<sup>th</sup> graders) was 801 scaled score units. At the end of the 2017-2018 school year and on the Spring administration of the STAR, the mean scaled score for 9<sup>th</sup> graders was 1028 scaled score units. Scores show a steady, positive increasing trend across years.



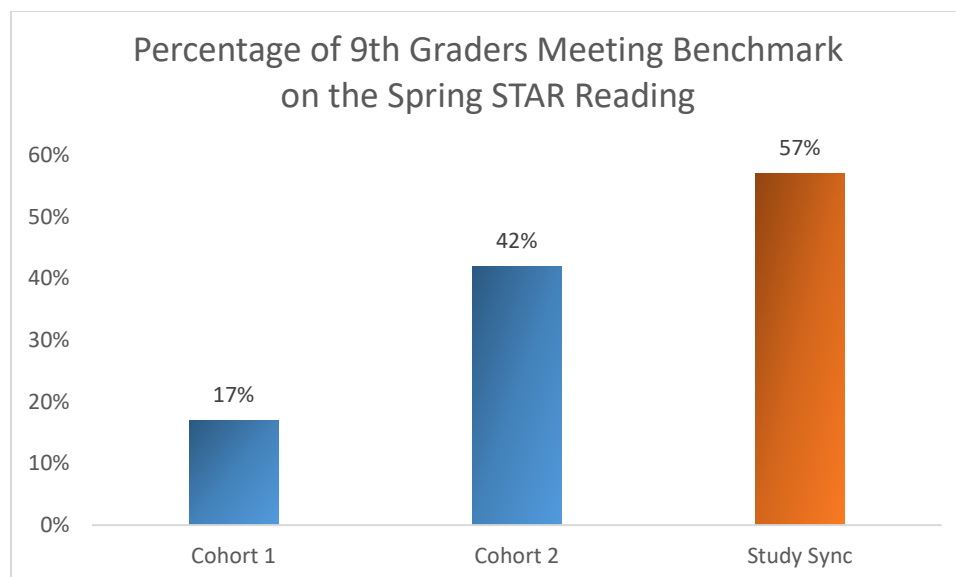
*Figure 2.* Trend in the expected and actual growth for 9<sup>th</sup> graders on the STAR Reading assessment. These results reflect the performance of the same group of students.

Figure 2 presents 9<sup>th</sup> graders' actual and expected mean growth from Fall to Spring, based on student grade level at the time of test administration (STAR Technical Manual, p. 118). These scores reflect the performance of the same group of students, over the course of three years. Note that the amount of expected growth *decreases* with increasing grade level; that is, more robust growth per benchmark and year is expected for students in the earlier grades and less growth is expected for students in the later grades. During the 2015-2016 school year when students were in the 7<sup>th</sup> grade, the mean expected growth in scaled score units was 87 and the actual mean growth in scaled score units was 63. During the 2016-2017 school year when students were in the 8<sup>th</sup> grade the mean expected growth was 73 and the mean actual growth was 97. During the 2017-2018 school year when students were in the 9<sup>th</sup> grade and participated in *StudySync*, the mean expected growth was 55 scaled score units and the mean actual growth was 57. On average, 9<sup>th</sup> graders exceeded the expected growth during the year prior to *StudySync* implementation and slightly exceeded it during the year of *StudySync* implementation.



*Figure 3.* Median percentile rank on the Spring assessment of STAR Reading. (Blue represents scores before *StudySync* usage. Red indicates Year 1 *StudySync* implementation.)

Figure 3 shows the median percentile rank associated with the Spring administration of the STAR assessment, by year. These scores reflect the performance of the same group of 9<sup>th</sup> graders over the course of three years. As shown, the median percentile rank on the Spring, 2016 STAR was 50 (mean = 48). On the Spring 2017 administration of the STAR, the median percentile rank was 49 (mean = 49). Finally, on the Spring 2018 administration of the STAR and during the year of *StudySync* implementation, the median percentile rank was 63 (mean = 61).



*Figure 4. Percentage of 9<sup>th</sup> graders meeting the Spring benchmark on STAR Reading. (Blue represents scores before *StudySync* usage. Red indicates Year 1 *StudySync* implementation.)*

Figure 4 shows the percentage of 9<sup>th</sup> grade students who met the Spring benchmark score on the STAR Reading assessment. These results show the performance of different cohorts of students, all who were in the 9<sup>th</sup> grade during the time of test administration: Students in Cohort 1 were 9<sup>th</sup> graders during the 2015-2016 school year and students in Cohort 2 were 9<sup>th</sup> graders during the 2016-2017 school year. As shown, about 57% of 9<sup>th</sup> grade students who participated in *StudySync* met the benchmark scaled score on the Spring administration of the STAR Reading assessment, while 17% of students in Cohort 1 and 42% of students in Cohort 2 met the benchmark.

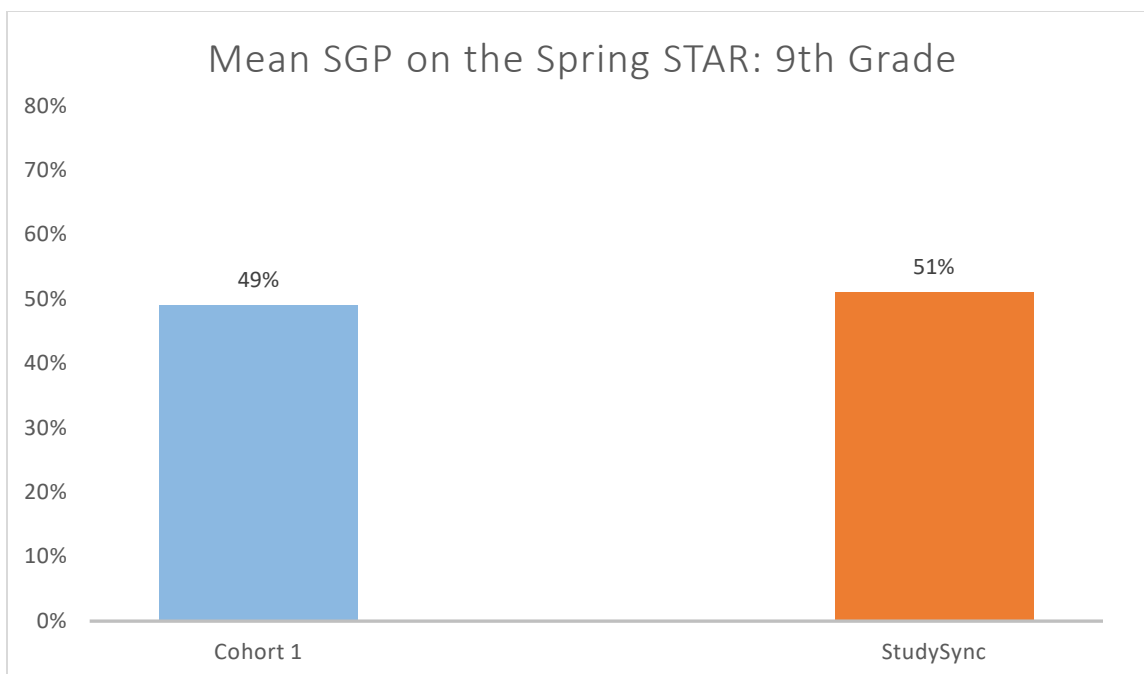
Table 3 shows the mean yearly gain of three cohorts of 9<sup>th</sup> grade students on the STAR Reading assessment. Cohort 1 reflects students in the 9<sup>th</sup> grade during the 2016-2017 school year and Cohort 2 reflects students in the 9<sup>th</sup> grade during the 2015-2016 school year. *StudySync* reflects students who participated in *StudySync* instruction and were 9<sup>th</sup> graders during the 2017-2018 school year. Using Analysis of Variance (ANOVA) to simultaneously compare the mean gains of all groups indicated that there were no statistically significant differences in the mean yearly gains among these three cohorts of 9<sup>th</sup> grade students.

Table 3

*Mean yearly gain of 9<sup>th</sup> grade students on STAR Reading, by Cohort*

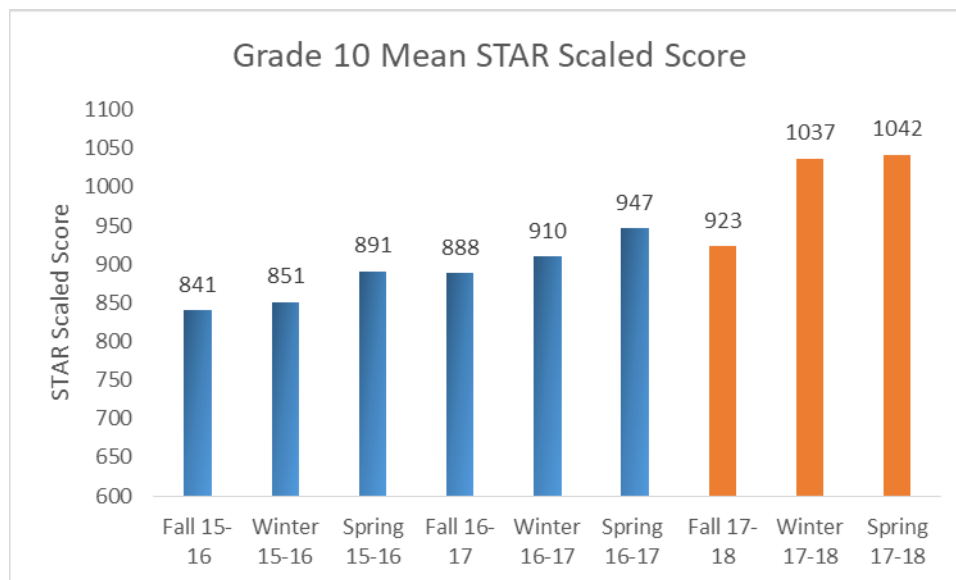
Group	n	Gain		Difference (SS – Cohort)	p	Significant?
		Mean	SD			
Cohort 1	53	59.17	169.00	-6.01	> .05	No
Cohort 2	43	37.05	146.00	+16.11	> .05	No
<i>StudySync</i>	67	53.16	164.96	--	--	--





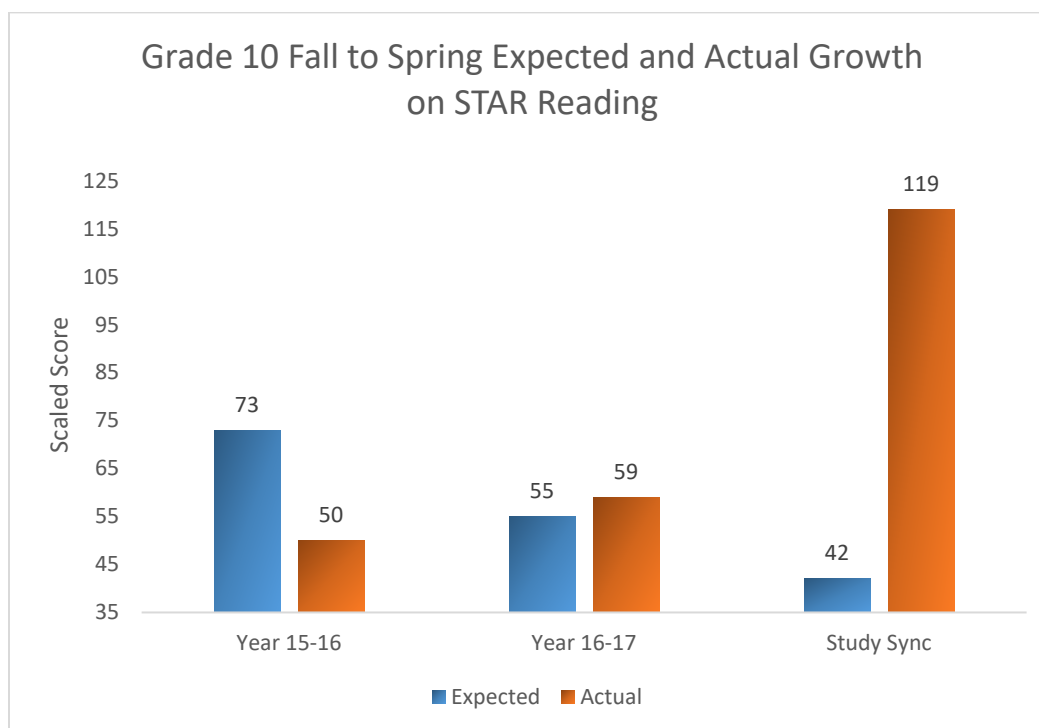
*Figure 5.* Mean Student Growth Percentile (SGP) on the Spring STAR.

Figure 5 presents the mean SGP on the Spring administration of the STAR, for 9<sup>th</sup> graders receiving *StudySync* instruction and available scores for a group of students who were 9<sup>th</sup> graders during the 2016-2017 school year and not receiving such instruction (Cohort 1). SGP scores were not available for students who were 9<sup>th</sup> graders during the 2015-2016 school year. The mean SGP for *StudySync* users was 51%, suggesting that the typical 9<sup>th</sup> grader receiving instruction using *StudySync* scored higher than 51% of students with similar score histories on the STAR. The mean SGP for non-users was 49%, indicating that the typical 9<sup>th</sup> grader who did not participate in *StudySync* scored higher than 49% of students with similar score histories.



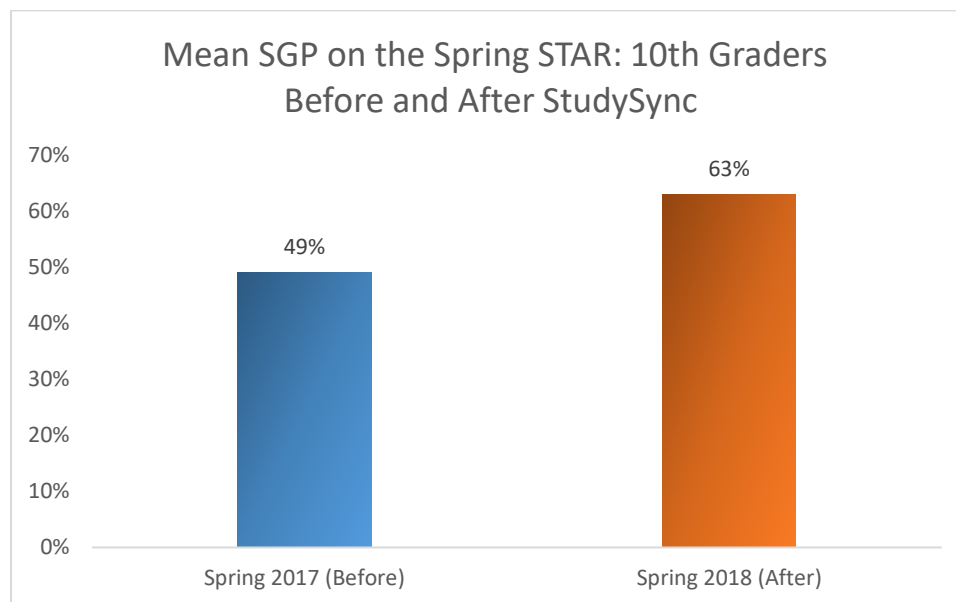
*Figure 6.* Mean STAR scaled scores for 10<sup>th</sup> grade students. (Blue represents scores before *StudySync* usage. Red indicates Year 1 *StudySync* implementation.)

Figure 6 highlights the mean scaled score on the Fall, Winter, and Spring STAR benchmark assessment for the same group 10th graders. Here, the mean scaled score on the Fall administration of the STAR and during the 2015-2016 school year (when these students were 8<sup>th</sup> graders) was 841 scaled score units. At the end of the 2017-2018 school year and on the Spring administration of the STAR, the mean scaled score for 10th graders was 1042 scaled score units. With the exception of a slight dip in scores in the Fall of 2017, scores show a steady, positive increasing trend across years. The largest gain from Fall to Spring was found during the year of *StudySync* implementation.



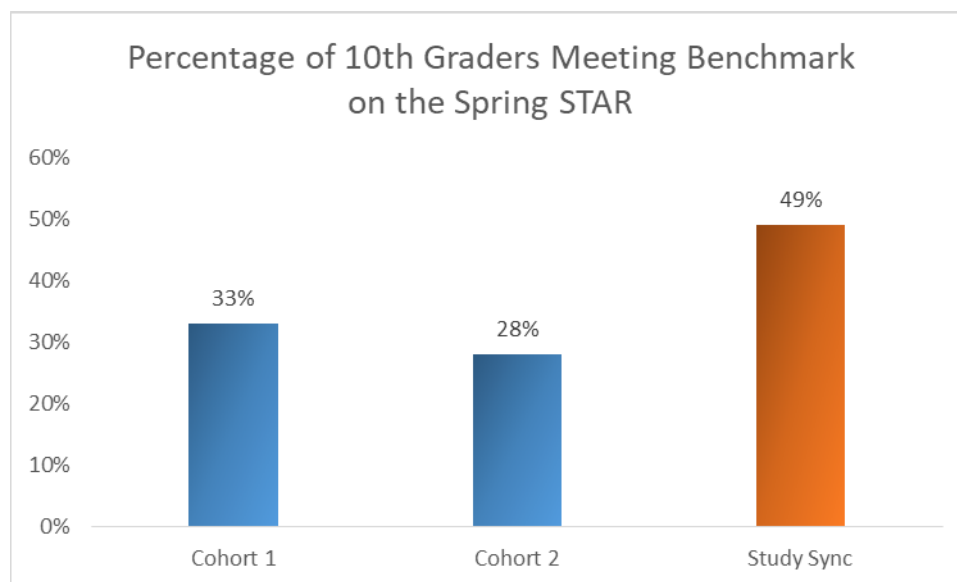
*Figure 7.* Trend in the expected and actual growth for 10<sup>th</sup> graders on the STAR Reading assessment. These results reflect the performance of the same group of students.

Figure 7 presents 10<sup>th</sup> graders' actual and expected mean growth from Fall to Spring, based on student grade level at the time of test administration (STAR Technical Manual, p. 118). These scores reflect the performance of the same group of students, over the course of three years. As noted previously, the amount of expected growth *decreases* with increasing grade level, with more robust growth per benchmark and year expected for students in the earlier grades and less growth is expected for students in the later grades. During the 2015-2016 school year when students were in the 8<sup>th</sup> grade, the mean expected growth in scaled score units was 73 and the actual mean growth in scaled score units was 50. During the 2016-2017 school year when students were in the 9<sup>th</sup> grade the mean expected growth was 55 and the mean actual growth was 59. During the 2017-2018 school year, when students were in the 10<sup>th</sup> grade and participated in *StudySync*, the mean expected growth was 42 scaled score units and the mean actual growth was 119. On average, 10<sup>th</sup> graders slightly exceeded the expected growth during the year prior to *StudySync* implementation and experienced more than two and one-half times the growth expectation the year of *StudySync* implementation.



*Figure 8.* Mean student growth percentile (SGP) on the Spring STAR, the year preceding and following implementation of *StudySync* for the same group of students in the 10<sup>th</sup> grade.

Figure 8 shows the mean SGP score on the Spring STAR for the same group of 10<sup>th</sup> grade students. The Spring 2018 score reflects the mean SGP the year of *StudySync* implementation and suggests that the typical student scored higher than 63% of students with similar score histories on the STAR. The Spring 2017 score reflects the mean SGP the year before *StudySync* implementation, and suggests that the typical student scored higher than 49% of students with typical score histories.



*Figure 9.* Percentage of 10<sup>th</sup> graders meeting the Spring benchmark of the STAR, by cohort. (Blue represents scores before *StudySync* usage. Red indicates Year 1 *StudySync* implementation.)

Figure 9 shows the percentage of 10<sup>th</sup> grade students who met the Spring benchmark score on the STAR Reading assessment. These results show the performance of different cohorts of students, all who were in the 10<sup>th</sup> grade during the time of test administration: Students in Cohort 1 were 10<sup>th</sup> graders during the 2015-2016 school year and students in Cohort 2 were 10<sup>th</sup> graders during the 2016-2017 school year. As shown, nearly half of 10<sup>th</sup> grade students who participated in *StudySync* met the benchmark scaled score on the Spring administration of the STAR Reading assessment, while a smaller percentage in comparison cohorts (33% of students in Cohort 1 and 28% of students in Cohort 2) met the benchmark.

Table 4 shows the mean yearly gain of three cohorts of 10th grade students on the STAR Reading assessment. Cohort 1 reflects students in the 10th grade during the 2015-2016 school year. Cohort 2 reflects students in the 10th grade during the 2016-2017 school year. *StudySync* reflects students who participated in *StudySync* instruction and were 10th graders during the 2017-2018 school year. ANOVA comparing the mean gains of all groups, simultaneously, indicated that there was a statistically significant difference in the mean yearly gains in at least one of these three cohorts of 10th grade students, and post hoc analysis indicated the difference was found between the *StudySync* students and students in Cohort 1 ( $p = .03$ ).

Table 4

*Mean yearly gain of 10<sup>th</sup> grade students on STAR Reading, by Cohort*

Group	n	Gain		Difference (SS – Cohort)	p	Significant?
		Mean	SD			
Cohort 1	33	78.02	134.82	+82.25	.03	Yes
Cohort 2	46	100.00	146.00	+20.27	> .05	No
<i>StudySync</i>	51	120.27	148.00	--	--	--

### *ACT Aspire and ACT*

In the Spring of the 2017-2018 school year and during implementation of *StudySync*, 9<sup>th</sup> graders and 10<sup>th</sup> graders were administered the ACT Aspire. Students in the 10<sup>th</sup> grade were administered the ACT Aspire during year prior to implementation of *StudySync* and when students were 9<sup>th</sup> graders.

*How did 9<sup>th</sup> graders perform on the 2017-2018 administration of the ACT Aspire?*

Table 5 shows the mean score of 9<sup>th</sup> graders who were administered the ACT Aspire during the 2017-2018 school year. The mean score of 9<sup>th</sup> graders on the ACT Aspire English subtest was roughly 427, about 1.34 units above that of the national norm for 9<sup>th</sup> graders. On the ACT Aspire Reading subtest, the mean score of 9<sup>th</sup> graders was about 425, nearly 5 units above that of the national norm for 9<sup>th</sup> graders. On the ACT Aspire Composite, the mean score of 9<sup>th</sup> graders was 426, about 2.42 units above that of the national norm for 9<sup>th</sup> graders. Using a one-sample t-test comparing the mean of the sample to the established (normed) mean, the mean scores of the sample of 9<sup>th</sup> graders was significantly different than that of the normed mean on the ACT Aspire Reading portion and on the ACT Aspire Composite.

Table 5.

#### *Performance of 9<sup>th</sup> Grade Students Taking the ACT Aspire During the Year of StudySync Implementation*

Test Area	n	Sample		Norm*		Difference	p	Significant?
		Mean	SD	Mean	SD			
English	71	426.82	8.71	425.48	10.76	+1.34	--	No
Reading	71	424.66	7.56	419.71	7.86	+4.95	.001	Yes
Composite	71	426.41	6.60	423.99	7.93	+2.42	.003	Yes

\*Source: ACT Aspire Technical Manual. ACT Inc., 2017

The ACT provided a ‘readiness’ benchmark on the ACT Aspire, which indicates whether or not students are considered ‘on target’ to meet corresponding ACT benchmarks when administered the ACT assessment later, during students’ 11<sup>th</sup> grade year. The readiness benchmark for 9<sup>th</sup> graders, based on the ACT Aspire score, is 426 on the ACT Aspire English scale and 425 on the ACT Aspire Reading scale (ACT Inc., 2017, p. 199).

Figure 10 presents the percentage of 9<sup>th</sup> graders meeting this benchmark on the ACT Aspire English and Reading components. In this sample of students, slightly over half of students were considered to meet these benchmarks. Note that on the 2016-2017 district-wide administration of the ACT to students, about 35% of students at the district level were considered to score at or above proficiency on the ACT assessment in English Language Arts. Here, about 55% and 54% of student receiving instruction with *StudySync* met the ACT Aspire benchmark on the English and Reading sections, respectively.

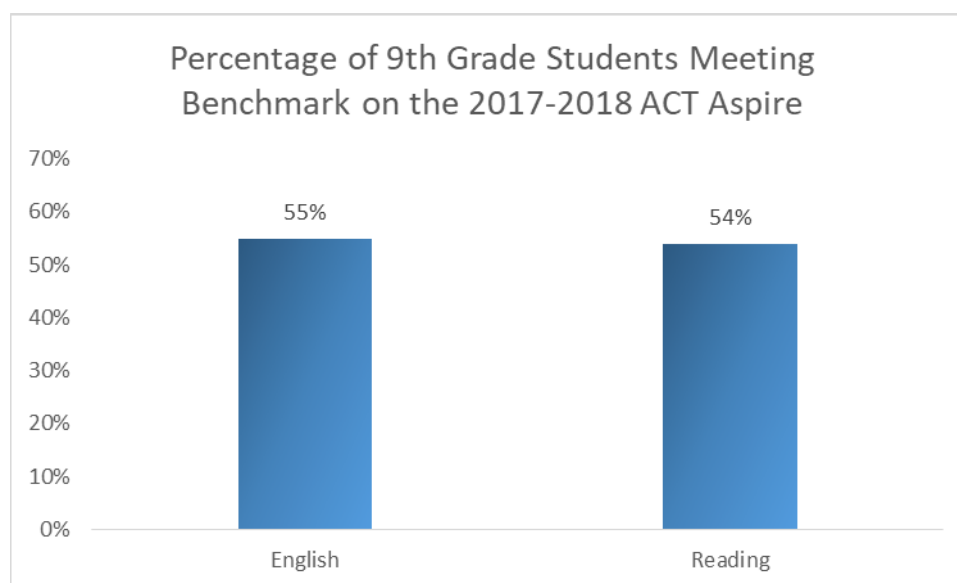


Figure 10. Percentage of 9<sup>th</sup> graders meeting the ACT Aspire benchmark score indicating ‘readiness’ for the ACT.



*How did 10<sup>th</sup> graders perform on the 2017-2018 administration of the ACT Aspire, compared to their performance on the 2016-2017 administration of the ACT Aspire?*

Table 6 shows student performance on the ACT Aspire for the cohort of students who were 10<sup>th</sup> graders during the 2017-2018 school year. This same group of students took the ACT Aspire as 9<sup>th</sup> graders in 2016-2017 (before *StudySync*) and as 10<sup>th</sup> graders in 2017-2018 (after *StudySync*). Therefore, scores presented here represent the performance of the same group of students.

Table 6.

*Performance of 10<sup>th</sup> Grade Students on the ACT Aspire, Before and After StudySync*

Area	n	2016-2017		2017-2018		Mean Gain	p	Effect Size $r^2$
		Mean	SD	Mean	SD			
English	53	425.49	8.32	427.42	9.19	1.925	.037*	.08
Reading	53	422.92	7.08	422.62	8.25	-0.302	NS	--
Composite	53	423.89	5.96	425.25	7.23	1.358	.017*	.10

\*Statistically significant,  $p < .05$ .

Note: Effect size computed using  $r^2 = t^2 / (t^2 + df)$

As shown in Table 6, the mean score on the 2017-2018 administration of the ACT Aspire increased by nearly two scaled score units on the English portion of the ACT Aspire and by about 1.3 scaled score units on the Composite. The difference in scores was statistically significant ( $p < .05$ ) and the effect size ( $r^2$ ) was considered ‘medium’. This indicates that the means are likely different and suggests that students performed significantly higher on the 2017-2018 administration of the ACT Aspire in English and the ACT Aspire Composite.

Of greater interest is the degree to which gains compare to expected gains, based on established norms. Table 7 presents the gains shown by the sample of 10<sup>th</sup> grade students and the expected gains, based on established norms. The mean gain on the ACT Aspire English was 1.93, which is 0.93 units higher than the expected gain. The mean gain on the ACT Aspire Reading was -0.30 units and is about 0.80 units lower than the expected gain. The mean gain on the ACT Aspire Composite was 1.36 units, which is about 0.16 units higher than the expected gain. The difference between the sample gain and the expected gain was not significantly different on any ACT Aspire assessment. This indicates that student gains made by *StudySync* users were largely similar to those observed by students, nationally.

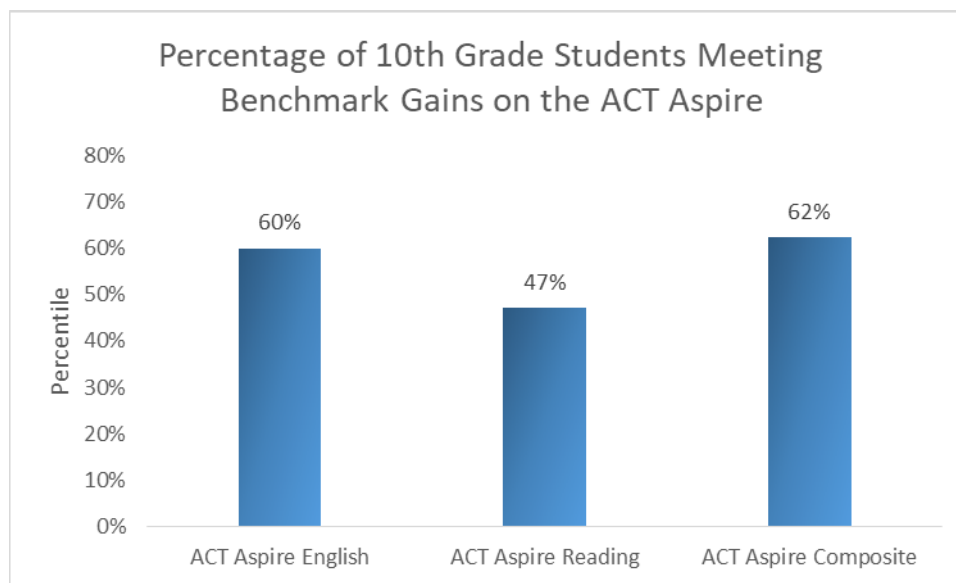
Table 7

*Actual and Expected Student Gains on the ACT Aspire, 10<sup>th</sup> Grade Students*

Area	n	Sample		Expected*		Difference	p	Significant?
		Mean Gain	SD	Mean Gain	SD			
English	53	1.93	6.50	1.00	6.30	+0.93	.30	No
Reading	53	-0.30	6.15	1.10	5.70	-0.80	.10	No
Composite	53	1.36	3.98	1.20	3.70	+0.16	.85	No

\*Source: ACT Aspire Technical Manual. ACT Inc., 2017, p 211.

Figure 11 shows the percentage of 10<sup>th</sup> grade students meeting expected gains on the 2017-2018 administration of the ACT Aspire. Students are expected to exhibit gains of 1.0 units on the ACT Aspire English, 1.1 units on the ACT Aspire Reading, and 1.2 units on the ACT Aspire Composite. As shown, roughly 60% of students met the expected gain on the ACT Aspire English and ACT Aspire Composite, and about 47% met the expected gain on the ACT Aspire Reading assessment.



*Figure 11.* Percentage of 10<sup>th</sup> grade students meeting benchmark gains on the ACT Aspire following two administrations, from 2016-2017 to 2017-2018. About 60% of students met the benchmark gain on the English portion, 47% met the benchmark gain on the Reading portion, and 62% met the benchmark gain on the Composite.

*How did 11<sup>th</sup> graders perform on the 2017-2018 administration of the ACT?*

Table 8 presents the mean score on the ACT for two groups: 11<sup>th</sup> grade students who participated in *StudySync* during their 11<sup>th</sup> grade year, and a cohort of 11<sup>th</sup> grade students who were administered the ACT during the previous school year and prior to implementation of *StudySync*. On the ACT English, Reading, Writing, and Composite, scores were largely similar across groups. The small difference found between groups was not statistically significant.

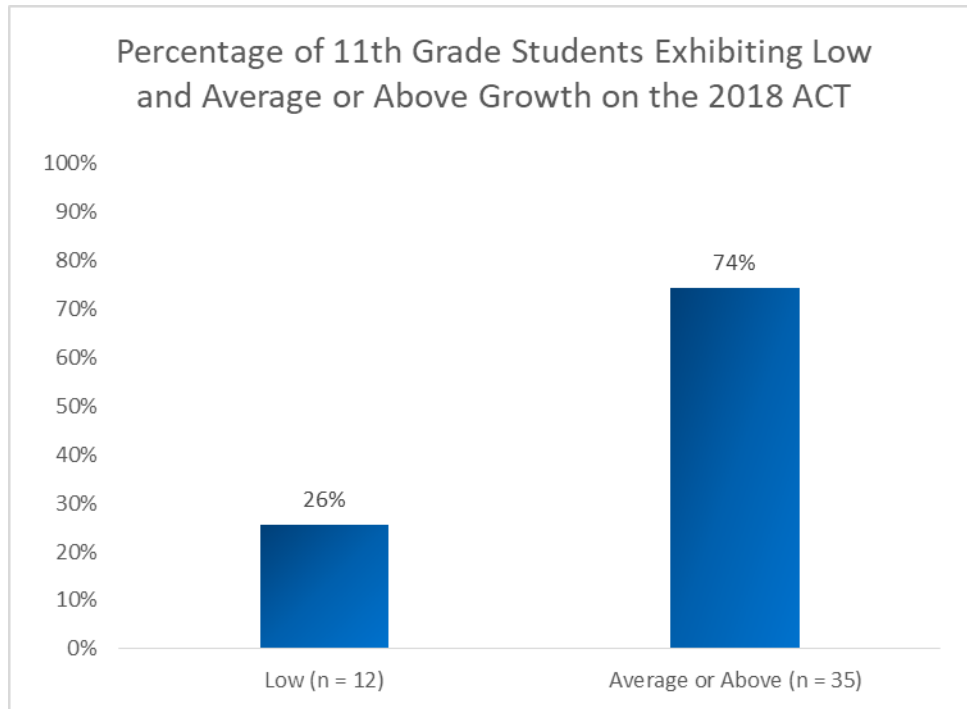
Table 8.

*Performance of 11<sup>th</sup> Grade Students on the ACT, by Group*

ACT Area	<i>StudySync</i>			Cohort			Difference	<i>p</i>	<i>Significant?</i>
	n	Mean	<i>SD</i>	n	Mean	<i>SD</i>			
English	49	15.43	4.55	34	15.97	5.13	-0.54	.62	No
Reading	49	16.49	4.69	34	17.21	4.68	-0.72	.49	No
Writing	49	5.51	1.66	34	5.56	1.64	-0.05	.89	No
Composite	49	16.65	3.74	34	17.06	3.93	-0.41	.63	No

Although the scores of 11<sup>th</sup> graders participating in *StudySync* did not differ significantly from the scores of a cohort of 11<sup>th</sup> graders not using the program, most students nevertheless made growth when taking the ACT following the year of *StudySync* implementation.

Figure 12 shows the percentage of students exhibiting Low, Average, or High Growth, based on the Student Growth Percentile (SGP) score for 11<sup>th</sup> grade students who were administered the ACT during the 2017-2018 school year. The SGP score is based on students' Aspire ACT score, administered during the 2016-2017 school year. Students with SGPs lower than 25 are considered to exhibit 'Low' growth. SGPs between 25 and 75 represent 'Average' growth, and SGPs above 75 represent 'High' growth (ACT Aspire, 2017, p. 14.5). As shown, about 25% of students exhibited low growth and nearly 75% of students exhibited average or above growth on the ACT.



*Figure 12.* Percentage of 11<sup>th</sup> graders exhibiting low and average to above growth on the ACT, based on their SGP calculated from students' previous performance on the ACT Aspire.

## *Discussion*

This study investigated the impact of a first year implementation of *StudySync* on a selected group of high school students. Overall, results were mixed, yet there were some preliminary positive findings. With regard to the STAR Reading assessment, 9<sup>th</sup> graders performed two units higher than expected on the Spring 2018 STAR, and the median percentile was 63, markedly higher than in previous years. Compared to previous cohorts, a higher percentage of 9<sup>th</sup> graders participating in *StudySync* (57%) met the Spring benchmark and exhibited a slightly higher mean SGP. However, the difference between cohorts in the mean gain on the STAR assessment was not significantly different. Ninth graders scored significantly higher than the norm on the Reading component of the ACT Aspire, as well as on the Composite, but did not on the English component. Over half of 9<sup>th</sup> grade, *StudySync* users were found to meet benchmark on the ACT Aspire in English and Reading.

Students in the 10<sup>th</sup> grade appeared to show stronger gains, making over twice the expected growth on the Spring 2018 STAR assessment after participating in *StudySync* than in the two years prior and without such instruction. Further, the mean SGP was higher in 2018 than in the previous year. Nearly half of 10<sup>th</sup> graders participating in *StudySync* met the benchmark on the Spring STAR compared to cohorts, and the mean yearly gain for 10<sup>th</sup> grade *StudySync* users was significantly higher than at least one cohort of students not using the program. Compared to their performance on the ACT Aspire before *StudySync*, 10<sup>th</sup> graders made statistically significant gains on the ACT Aspire English and on the Composite, and the effect size was ‘medium’. Tenth graders exceeded the expected gain on the English and on the ACT Aspire Composite, but the gains were not significantly higher than typically expected for students, based on established norms. The majority of 10<sup>th</sup> graders, however, met benchmark gains on the ACT Aspire English and Composite during the 2017-2018 year following *StudySync* implementation.

Scores for 11<sup>th</sup> graders who were administered the ACT in the year of *StudySync* implementation did not perform significantly differently than a cohort of peers who did not participate in *StudySync* and were administered the ACT the year prior. However, about three-fourths of *StudySync* users made Average to Above Average growth on the ACT, based on their performance on the ACT Aspire, administered the year prior.

While there were some compelling results found in the study, there are some notable caveats that must be made when interpreting these findings. Although cohorts of students were utilized to provide a standard of comparison, the groups themselves may not have been equivalent. For example, it is not known whether or not students received special education services, the method in which students were selected for participation, the type of classes in which students were placed (e.g., Honors or Advanced classes or general courses) or the demographics of students. Additionally, an index of fidelity of program implementation and information about the amount of time students spent using the program were absent.

Nevertheless, these findings are worth exploring further, with modifications to the study design. A second year of study, perhaps expanding implementation of *StudySync* is recommended, with the incorporation of an equivalent comparison group and fidelity of implementation data. A second-year study would permit an examination of student outcomes during a ‘solid’

implementation of *StudySync*, with first-year implementation “bugs” sorted out. This would also permit a comparison between second-year users of *StudySync* and first year users. Finally, student demographic data would be helpful in determining if there are differential effects for users of varying demographic backgrounds.

DISCLAIMER: Class performance can improve due to a number of factors, including the innate ability and prior education of the students participating, as well as differences among teachers and their pedagogies. We believe that, even taking these factors into account, *StudySync* can contribute to improvements in student outcomes.

## References

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