

EFFICACY STUDY

A Study of the Impact of Apex Learning Tutorials on Student Achievement

School Year 2014–2015

November 2015



Introduction

Apex Learning, a leader in digital curriculum for nearly two decades, introduced Tutorials in October 2013. Tutorials are developed for today's standards to personalize learning and improve student achievement.

Within Tutorials, each content module focuses on a specific set of learning objectives aligned to the standards. Students may complete only those modules that address a particular need or complete all modules in a Tutorial. As of September 2015, more than half a million modules have been used by over 46,000 students since Tutorials were first available. Half of all modules (51%) were completed by enrollments that were last accessed during the 2014-15 school year.

The purpose of this report is to summarize the impact Tutorials had on student learning during the 2014-2015 school year (SY2015). Findings suggest that use of Tutorials improves student achievement as measured by posttest assessments.

Descriptive statistics, correlations, regression analysis and t-tests were performed on module level data for enrollments that last accessed Tutorials during SY2015. The dataset included enrollment level data from 111,021 modules containing pre-test, test-it, and post-test scores spanning math and English language arts Tutorials. Analyses were conducted for all modules combined and by subject.

Findings

Tutorials improved student content mastery as measured by posttest achievement.

For modules combined across all Tutorials products, the mean posttest percent correct score is 17 points higher than the mean pre-test score (Appendix Table 3). By subject, the average posttest is higher by 17 points for English and 16 points for math. The magnitude of the difference between the mean pre-test and posttest scores is equivalent to a **20 percentile point improvement** for both subjects following use of the Learn It, Review It and Try it instructional activities contained in each module.

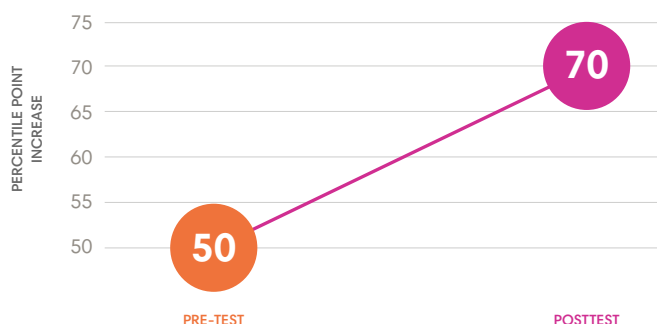


Figure 1:
Achievement Gains of Average Performing Student

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Furthermore, the results of the regression analyses (Appendix Table 4) suggest that Tutorials instructional activities, measured by testit performance, had a greater impact on posttest achievement than initial pretest ability. For all modules combined, the testit score contributed 1.7 times more to posttest achievement than pretest ability. By subject, testit achievement contributed 1.6 times more to posttest achievement than pretest ability for English and 1.9 times more for math.

Flexible implementation models support teacher and student needs. The following implementations illustrate the impact that Tutorials made on student content mastery.

Implementation Models: EOC Preparation

| School District A | Subject | | | | | | | | | | |
|-------------------|---------|---------------|---------------------|---------------------|------------------------------|---------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|---------------------------------------|
| | | Enrollments N | Modules Attempted N | Average Days Used N | Average Progress Completed % | Average PreTest Correct % | Average Testit Correct % | Average PostTest Correct % | Average Final Score Correct % | Average Pre-Post Gain % | Average PreTest to Final Score Gain % |
| Middle School | All | 197 | 2764 | 157 | 67.93 | 0.37 | 0.87 | 0.79 | 0.83 | 0.41 | 0.45 |

Implementation Description

“We chose Tutorials for end-of-course exam preparation because of the level of rigor and alignment to our state standards and exams.”

— Math Teacher, School District A

Implementation Models: EOC Preparation

| School District B | Subject | | | | | | | | | | |
|----------------------|---------|---------------|---------------------|---------------------|------------------------------|---------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|---------------------------------------|
| | | Enrollments N | Modules Attempted N | Average Days Used N | Average Progress Completed % | Average PreTest Correct % | Average Testit Correct % | Average PostTest Correct % | Average Final Score Correct % | Average Pre-Post Gain % | Average PreTest to Final Score Gain % |
| High School | English | 10 | 49 | 118 | 35.27 | 0.40 | 0.69 | 0.61 | 0.65 | 0.21 | 0.25 |
| Middle School | Math | 20 | 162 | 43 | 81.64 | 0.63 | 0.90 | 0.85 | 0.87 | 0.22 | 0.24 |
| All District Schools | All | 87 | 411 | 54 | 49.06 | 0.54 | 0.81 | 0.74 | 0.77 | 0.19 | 0.23 |

Implementation Description

High School: Freshmen at risk of failure completed selected English 8 modules in class; teacher used results to differentiate remedial instruction.

Middle School: Teachers used Math 7 Tutorials to differentiate instruction for 8th grade students with learning disabilities.

Implementation Model: Middle School Acceleration

| School District C | Subject | Enrollments N | Modules Attempted N | Average Days Used N | Average Progress Completed % | Average PreTest Correct % | Average Testit Correct % | Average PostTest Correct % | Average Final Score Correct % | Average Pre-Post Gain % | Average PreTest to Final Score Gain % |
|-------------------|---------|---------------|---------------------|---------------------|------------------------------|---------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|---------------------------------------|
| Middle School | All | 251 | 7,574 | 120 | 93.76 | 0.54 | 0.80 | 0.77 | 0.78 | 0.23 | 0.25 |

Implementation Description

Teachers challenged advanced middle school students with Tutorials in a flipped classroom implementation.

Implementation Model: High School Programs

| District Name | Subject | Enrollments N | Modules Attempted N | Average Days Used N | Average Progress Completed % | Average PreTest Correct % | Average Testit Correct % | Average PostTest Correct % | Average Final Score Correct % | Average Pre-Post Gain % | Average PreTest to Final Score Gain % |
|---------------|---------|---------------|---------------------|---------------------|------------------------------|---------------------------|--------------------------|----------------------------|-------------------------------|-------------------------|---------------------------------------|
| District D | All | 208 | 1,920 | 102 | 24.94 | 0.42 | 0.75 | 0.65 | 0.71 | 0.23 | 0.28 |
| District E | All | 149 | 743 | 26 | 22.59 | 0.43 | 0.74 | 0.68 | 0.72 | 0.25 | 0.29 |
| District F | All | 122 | 2,524 | 213 | 42.99 | 0.41 | 0.65 | 0.67 | 0.65 | 0.26 | 0.24 |
| District G | All | 56 | 288 | 66 | 13.21 | 0.46 | 0.81 | 0.77 | 0.79 | 0.31 | 0.33 |

Appendix

Table 1: SY2015 Use

| Use | Frequency | School Year Frequency Percent of Total ¹ |
|-------------------------------------|---------------|---|
| Pre-Test Only | 113854 | 35.1 |
| Test-It Only | 26745 | 8.3 |
| Post-Test Only | 60 | .0 |
| All Pre-Test and Test-It Combined | 152971 | 47.2 |
| All Pre-Test and Post-Test Combined | 128085 | 39.5 |
| Pre-Test, Test-It, Post-Test | 111021 | 34.3 |
| Total : | 324045 | |

¹ Percents will not add up to 100.

Table 2: SY2015 Module descriptive statistics: modules with pretest, testIt, and posttest scores

| Group | Statistics | | Pre-Test | Test-It | Post-Test |
|---------|----------------|---------|----------|---------|-----------|
| All | N | Valid | 111,021 | 111,021 | 111,021 |
| | | Missing | 0.00 | 0.00 | 0.00 |
| | Mean | | 0.42 | 0.65 | 0.58 |
| | Std. Deviation | | 0.30 | 0.33 | 0.43 |
| English | N | Valid | 64,413 | 64,413 | 64,413 |
| | | Missing | 0.00 | 0.00 | 0.00 |
| | Mean | | 0.43 | 0.68 | 0.60 |
| | Std. Deviation | | 0.32 | 0.34 | 0.35 |
| Math | N | Valid | 46,477 | 46,477 | 46,477 |
| | | Missing | 0.00 | 0.00 | 0.00 |
| | Mean | | 0.40 | 0.61 | 0.55 |
| | Std. Deviation | | 0.27 | 0.31 | 0.33 |

Table 3: Paired samples t-test: Average difference between pretest and posttest means by group

| Group | Mean | 95% Confidence Interval of the Difference | | t | df | Sig. (2-tailed) | Effect Size Cohen's <i>d</i> |
|---------|------|---|-------|--------|---------|-----------------|------------------------------|
| | | Lower | Upper | | | | |
| All | 0.17 | 0.16 | 0.17 | 143.47 | 111,020 | 0.00** | 0.51 |
| English | 0.17 | 0.17 | 0.18 | 104.68 | 64,412 | 0.00** | 0.51 |
| Math | 0.16 | 0.15 | 0.16 | 101.46 | 46,476 | 0.00** | 0.52 |

** Significant difference $p < .01$

Table 4: Linear regression

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | t | Sig. | df |
|---------|------------|-----------------------------|------------|---------------------------|--|---------|---------|---------|
| | | B | Std. Error | Beta | | | | |
| All | (Constant) | 0.246 | 0.002 | | | 111.415 | 0.000** | |
| | PreTest | 0.235 | 0.003 | 0.203 | | 72.767 | 0.000** | |
| | TestIt | 0.362 | 0.003 | 0.349 | | 125.283 | 0.000** | 111.020 |
| English | (Constant) | 0.324 | 0.003 | | | 101.662 | 0.000** | |
| | PreTest | 0.193 | 0.004 | 0.172 | | 45.533 | 0.000** | |
| | TestIt | 0.283 | 0.004 | 0.273 | | 72.284 | 0.000** | 64.412 |
| Math | (Constant) | 0.142 | 0.003 | | | 49.242 | 0.000** | |
| | PreTest | 0.293 | 0.005 | 0.241 | | 59.954 | 0.000** | |
| | TestIt | 0.480 | 0.004 | 0.458 | | 114.199 | 0.000** | 46.476 |

** Significant difference $p < .01$



More Learning Happens

Apex Learning puts rigorous, standard-based curriculum within reach for all students—from those struggling to those capable of acceleration—to prepare them for the next course, the next stage in their education, work and life. Schools use Apex Learning digital curriculum because it is proven that more learning happens with the powerful, actionable data that gives educators insight into student performance, and the personalization and engagement students need to succeed. During the 2015–2016 school year, there were more than three million enrollments in Apex Learning Comprehensive Courses for original credit and credit recovery and Adaptive Tutorials for intervention, remediation, and to prepare for high-stakes assessments. Headquartered in Seattle, Apex Learning is accredited by AdvancEd and its courses are approved for National Collegiate Athletic Association eligibility.

Contact

Apex Learning

1215 Fourth Ave., Suite 1500
Seattle, WA 98161
Phone: 1 (206) 381-5600
Fax: 1 (206) 381-5601
ApexLearning.com