



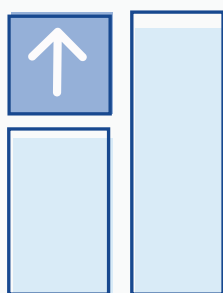
# A Study of the Impact of Apex Learning Tutorials on Middle and High School Student Achievement

School Year 2017–2018

October 2018

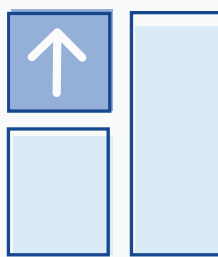
Tutorials improve student performance by more than 50%

**61%**  
Improvement



Middle School

**57%**  
Improvement



High School

Average pretest to posttest percent gain



## Introduction: Apex Learning Tutorials

Apex Learning Tutorials prepare students to master grade-level content with standards-based instruction, while providing seamless support for students who struggle with grade-level content. Instruction is delivered in discrete modules addressing specific concepts, and modules are grouped into units of related concepts. Students may complete only those modules that address one or more specific standards, or complete all modules in Tutorials for a grade or subject area.

Tutorials provide a personalized learning path for each student. Unit-level pretests prescribe a plan of instruction to meet students' individual learning needs, and students struggling with grade-level concepts are prescribed remedial instruction of skills down to the third-grade level. The learning path continually adapts as each student progresses through each module.

Embedded pretest, Test It, and posttest assessments provide performance data by module, unit, or standard, quickly identifying where students have demonstrated content mastery and where they still need to focus their learning.

## Purpose of Study

The purpose of this study is to investigate the impact of Apex Learning middle and high school Tutorials on student learning during the 2017-2018 school year. The analysis addresses the question: "What impact does Tutorials use make on achievement gain from pretest to posttest?"

The results of 261,572 modules with pretest, Test It, and posttest scores across Tutorials were evaluated to determine if posttest achievement was significantly greater than pretest performance. Paired-samples t-tests were used to evaluate the data for middle and high school Tutorials separately.

Descriptive statistics and statistical results are located in the appendix.

## Findings

**Apex Learning Tutorials significantly improved student performance on Tutorials posttest assessments in both middle school and high school—and across English, math, science, and social studies.**

Results of paired-samples t-tests (Table 2) suggest that Tutorials had a statistically significant impact on middle and high school student posttest achievement compared to pretest performance. The magnitude of the effect approached large for both middle school and high school ( $d=.86$  and  $.79$  respectively).

Following the use of middle school Tutorials:

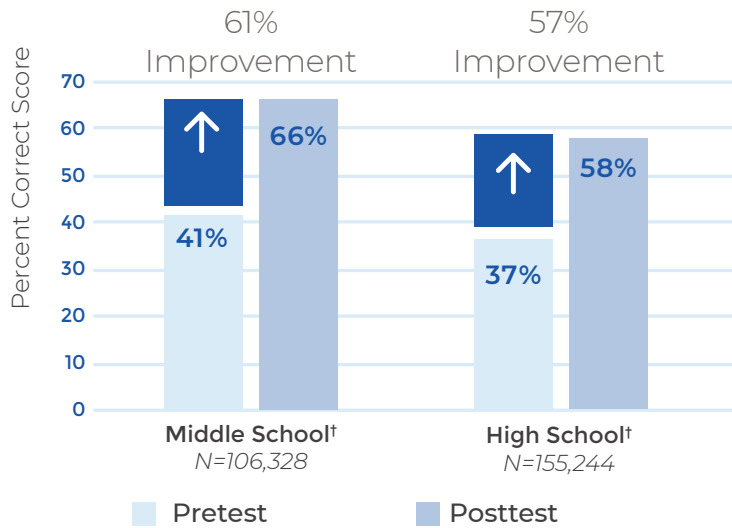
- Posttest achievement improved by 61% relative to pretest performance.
- Students gained on average 31 percentile points from pretest to posttest.

Following the use of high school Tutorials:

- Posttest achievement improved by 57% relative to pretest performance.
- Students gained on average 29 percentile points from pretest to posttest.

Figure 1 shows average pretest and posttest achievement scores following use of middle and high school Tutorials. Table 1, located in the appendix, shows pretest, Test It, and posttest descriptive statistics.

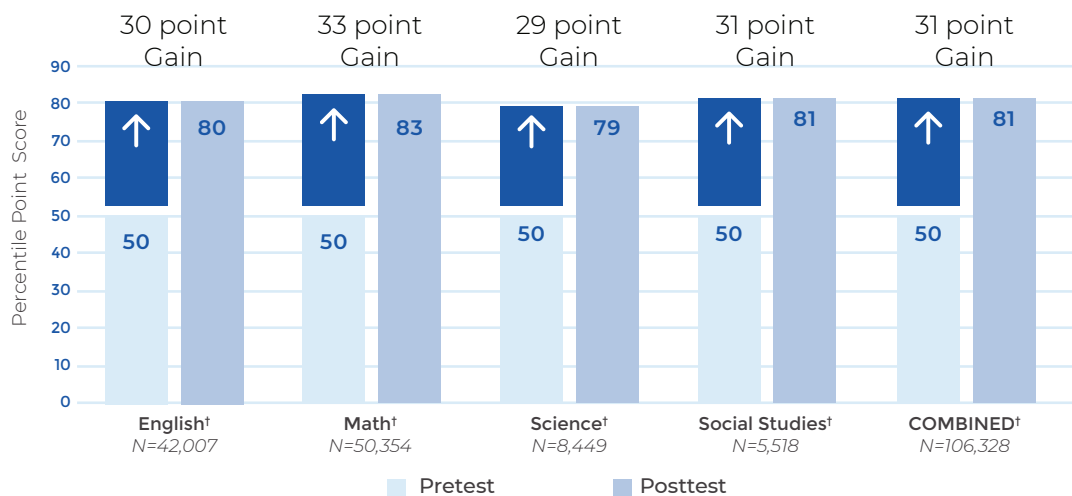
**Figure 1**  
Average Pretest, Posttest, and Percent Improvement



† Statistically significant,  $p < .001$   
N=number of modules included in the analysis

Figures 2 and 3 show pretest and posttest percentile scores and percentile point gain by subject for middle and high school Tutorials.

**Figure 2**  
Average Pretest, Posttest, and Gain  
Middle School by Subject

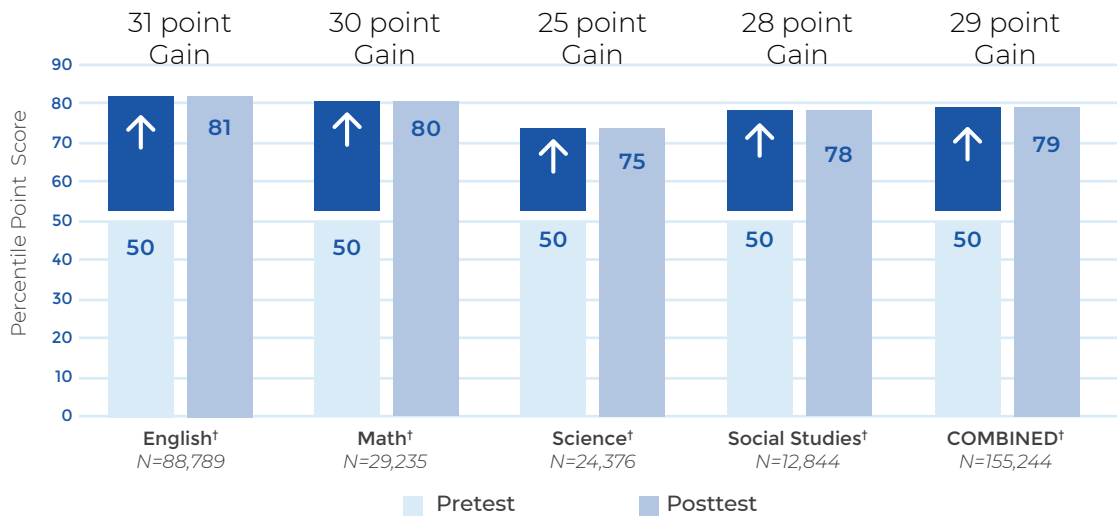


† Statistically significant,  $p < .001$   
N=number of modules included in the analysis

Figure 3

Average Pretest, Posttest, and Gain

### High School by Subject



† Statistically significant,  $p < .001$   
 N=number of modules included in the analysis

## Study Description

### Study Design

A pretest posttest single group design was used to evaluate the impact of Tutorials use on posttest performance.

### Participants

During the 2017-2018 school year, students from across the nation used over one million middle and high school Tutorials modules. Student enrollments with completed unit pretests, 100% of unit modules, and unit posttests were included in analytical dataset.

### Data Preparation

Apex Learning provided 1,172,442 records of student level module data including enrollment ID number, subject, Tutorials name, unit name, module name, and pretest, Test It, and posttest scores. Unit level pretest and posttest scores were distributed across modules by corresponding objectives. Twenty-two percent (22%) of modules containing pretest, Test It, and posttest scores were included in the analytical dataset.

### Analysis

A paired-samples t-test was used to determine if the average module posttest score was significantly greater than the average module pretest score. Cohen's d was used as a measure of effect size.

## Limitations

A single group design was used to analyze the impact of Tutorials use on pretest to posttest gain. Single group design studies are limited by not having a comparison group to control for events unrelated to the intervention that could impact posttest performance. Events unrelated to the intervention include participant maturation, testing, instrument decay, and regression to the mean.

## Outcome Measures

The outcome measure used in this study is the Tutorials posttest score reported at the module level.

## Appendix

Table 1. Module Level Descriptive Statistics								
Subject		Modules	Initial Pretest Score		Max Test It Score		Max Posttest Score	
		<i>N</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
Middle School	English	42,007	38.50	31.43	73.80	29.37	65.36	32.79
	Math	50,354	45.37	29.40	77.08	26.23	73.03	29.09
	Science	8,449	40.54	27.69	70.29	26.32	62.47	29.11
	Social Studies	5,518	38.25	27.92	73.99	27.62	62.45	30.25
Combined		106,328	40.67	29.11	73.79	27.38	65.83	30.31
High School	English	88,789	36.24	30.28	69.66	29.99	62.53	33.63
	Math	29,235	34.54	25.55	59.83	27.63	56.13	29.17
	Science	24,376	37.29	26.69	64.24	27.00	55.66	28.28
	Social Studies	12,844	39.34	26.63	65.47	28.63	59.65	29.30
Combined		155,244	36.85	27.29	64.80	28.31	58.49	30.09

Table 2. Paired-Samples T-Tests						
Subject		Paired Difference Mean	<i>t</i>	<i>df</i>	<i>Sig. p</i>	Effect Size <i>d</i>
Middle School	English	26.86	137.00	42,006	0.00 †	0.85
	Math	27.66	202.45	50,353	0.00 †	0.94
	Science	21.93	58.70	8,448	0.00 †	0.79
	Social Studies	24.20	51.05	5,517	0.00 †	0.87
Combined		25.16	246.96	106,327	0.00 †	0.86
High School	English	26.29	194.89	88,788	0.00 †	0.87
	Math	21.59	111.16	29,234	0.00 †	0.84
	Science	18.37	89.15	24,375	0.00 †	0.69
	Social Studies	20.31	69.70	12,843	0.00 †	0.76
Combined		21.64	249.70	155,243	0.00 †	0.79

† Statistically significant,  $p < .001$



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