A Study of the Impact of ACT® Adaptive Tutorials on Student Achievement

School Year 2016–2017

December 2017

48%**GAIN**

↑

Students using
ACT® Tutorials
improved 48%

45

66

Pretest   Posttest
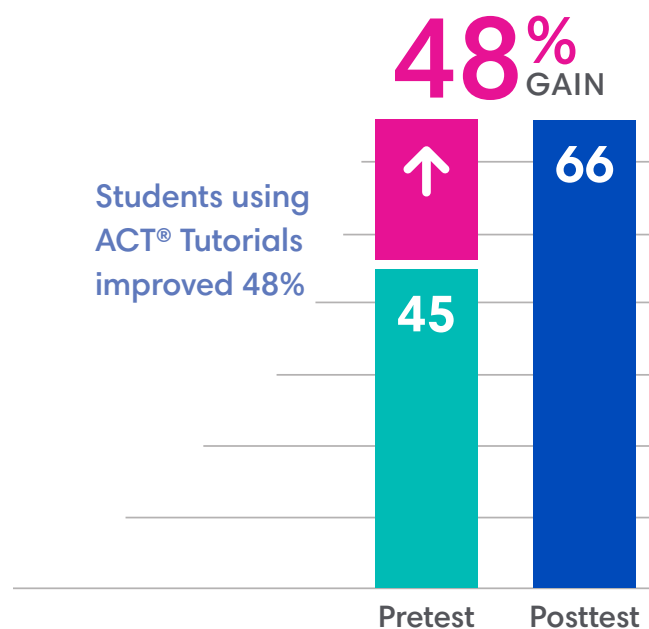
Introduction

The purpose of this study is to examine the impact of Apex Learning ACT® Adaptive Tutorials on student learning during the 2016–2017 school year. This study examined the impact of ACT® Tutorials on student posttest achievement.

ACT® Tutorials provide instruction, practice, and assessment aligned to concepts assessed by the ACT® English, math, and reading subject tests. Tutorials for subject-area tests provide students an individualized course of study that includes direct instruction and practice based on the results of unit pretests. The course of study continually adapts to students' unique learning needs as they complete unit modules and formative assessments.

After completing 100% of the unit modules, students complete a posttest to evaluate their progress. Tutorials assessment results link students' performance to concepts assessed by the ACT® tests, quickly identifying where students have demonstrated content mastery and where they still need to focus their learning.

Results

Tutorials improved student achievement on ACT® Tutorials posttests.

Results of paired-samples *t*-tests (Table 2) suggest that ACT® Tutorials had a statistically significant impact on Tutorials posttest achievement compared to pretest performance. The findings suggest:

- Student achievement improved 48% from pretest to posttest following use of ACT® Tutorials combined (Figure 1).

- The gain from pretest to posttest was equivalent to 25 percentile points for Tutorials combined (Figure 2).

Figure 1 shows posttest improvement ranged from 43% to 50% by subject and 48% combined following use of ACT® Tutorials. Table 1 in the appendix shows pretest, Test It, and posttest descriptive statistics.

FIGURE 1:

ACT® Tutorials Average Pretest, Posttest, and Gain: Percent Correct Score
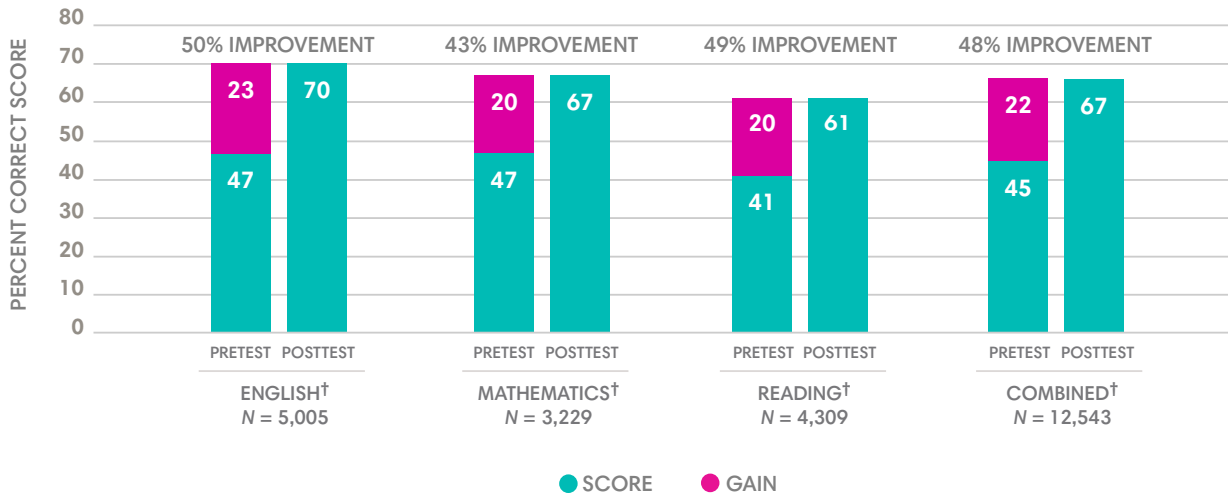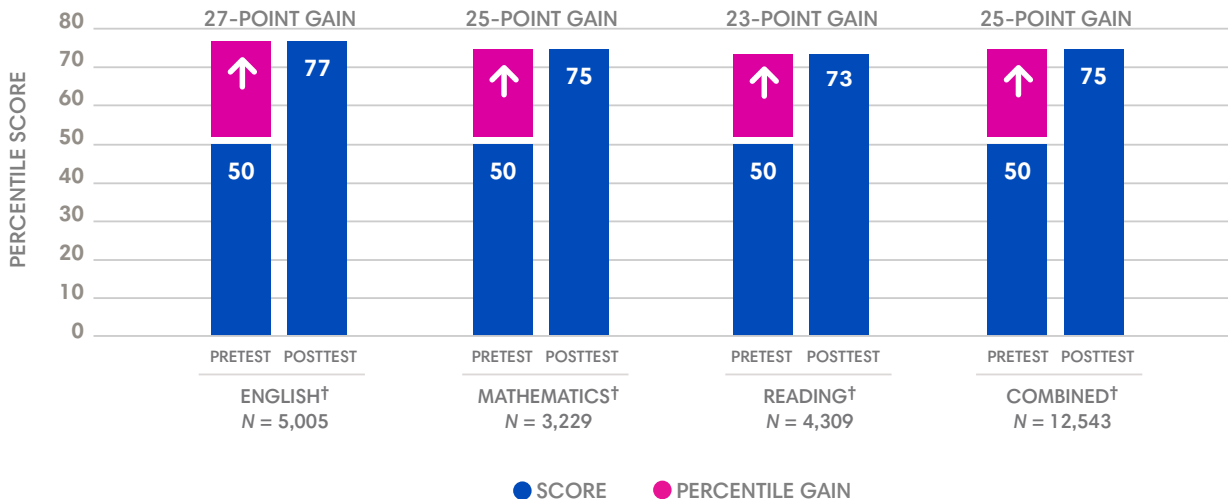

† Statistically significant, $p < .001$
N = number of modules included in the analysis

Figure 2 shows the equivalent percentile corresponding to the average ACT® Tutorials pretest and posttest scores, and the point gain between assessments. Student posttest achievement improved between 23 and 27 percentile points by subject relative to pretest achievement, and 25 percentile points overall following ACT® Tutorials use (Figure 2).

FIGURE 2:

ACT® Average Pretest, Posttest, and Gain: Equivalent Percentile Score

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

Apex Learning Adaptive Tutorials Description

ACT® Tutorials provide targeted instruction, practice, and review of content and skills assessed by each test included in the ACT® Exam. Pretests and embedded formative assessments build an individualized course of study for each student that includes direct instruction, practice, review, and assessment, and that adapts to each student's unique learning needs.

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 2016–2017 school year, student enrollments with completed unit pretests, 100% of unit modules, and unit posttests were included in the analytical dataset.

Data Preparation

Apex Learning provided 18,030 records of student-level module data. Seventy percent (70%) of records containing pretest, Test It, and posttest scores[1] were included in the analytical dataset.

Analysis

Paired-samples *t*-tests were used to determine if the average module posttest score was significantly greater than the average module pretest score by subject area and subjects combined. 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 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.

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[1] Unit level pre-test and post-test scores were distributed across modules by corresponding objectives tested.

Appendix

Table 1. Module Level Descriptive Statistics								
	Modules	Pretest		Test It		Posttest	
Tutorials	N	M	SD	M	SD	M	SD
ACT® English	5,005	46.65	30.88	74.56	32.12	70.49	31.83
ACT® Mathematics	3,229	46.71	26.96	68.68	29.4	66.58	30.18
ACT® Reading	4,309	40.87	30.17	69.18	32.28	60.97	33.77
Combined	12,543	44.68	29.8	71.2	31.62	66.21	32.36

Table 2. Paired-Samples *t*-Tests					
Tutorials	Difference M	df	t	Sig. p	ES
ACT® English	23.84	5,004	44	0.00 †	0.76
ACT® Mathematics	19.87	3,228	39	0.00 †	0.70
ACT® Reading	20.10	4,308	33	0.00 †	0.63
Combined	21.53	12,542	65	0.00 †	0.69

† Statistically significant, $p < .001$

More Learning Happens

Apex Learning puts rigorous, standards-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 2016–2017 school year, there were more than three and a half 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.

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