A Study of Tutorials Use and Effectiveness

Tutorials Improve Student Post-Test Achievement

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Summary

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 (SY – 2015). Findings suggest that use of Tutorials improves student achievement as measured by PostTest assessments.

Descriptive statistics, correlations, regression analysis, and t-ests were performed on module-level data for enrollments that last accessed Tutorials during SY – 2015. The dataset included enrollment-level data from 111,021 modules containing PreTest, TestIt, and PostTest scores spanning math and English language arts Tutorials. Analyses were conducted for all modules combined and by subject.

Tutorial Usage Since Launch

By the Numbers

631,273 Modules

57,553 Enrollments

46,551 Students

2,451 Teachers

789 Schools

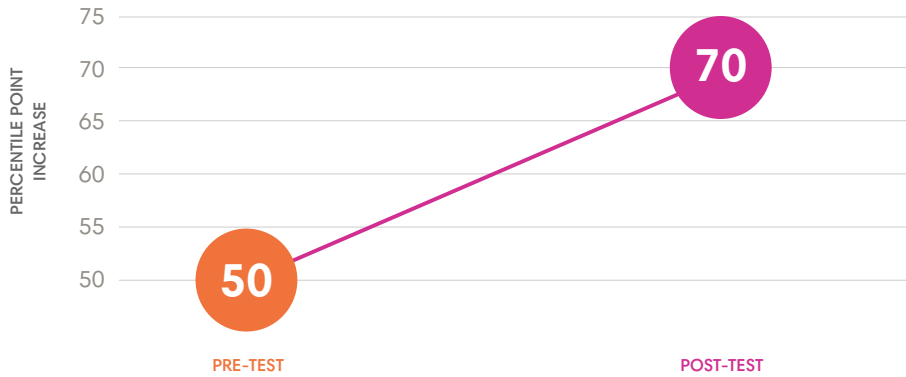## Results

Tutorials improved student content mastery as measured by post-test achievement.

For modules combined across all Tutorials products, the mean PostTest percent-correct score is 17 points higher than the mean PreTest score (see table 3 in the appendix). 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 PreTest 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.

Achievement Gains of Average-Performing Student

Furthermore, the results of the regression analyses (see table 4 in the appendix) 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 Pre-Test Correct %	Average Test It Correct %	Average Post-Test Correct %	Average Final Score Correct %	Average Pre-Post Gain %	Average Pre-Test 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 Pre-Test Correct %	Average Test It Correct %	Average Post-Test Correct %	Average Final Score Correct %	Average Pre-Post Gain %	Average Pre-Test 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 eighth-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 Pre-Test Correct %	Average Test It Correct %	Average Post-Test Correct %	Average Final Score Correct %	Average Pre-Post Gain %	Average Pre-Test 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 Pre-Test Correct %	Average Test It Correct %	Average Post-Test Correct %	Average Final Score Correct %	Average Pre-Post Gain %	Average Pre-Test 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]
PreTest Only	113,854	35.1
TestIt Only	26,745	8.3
PostTest Only	60	0
All PreTest and TestIt Combined	152,971	47.2
All PreTest and PostTest Combined	128,085	39.5
PreTest, TestIt, PostTest	111,021	34.3
Total :	**324,045**	

[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	0	0
	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	0	0
	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	0	0
	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 d |
		Lower	Upper				
All	0.17	0.16	0.17	143.47	111,020	0*	0.51
English	0.17	0.17	0.18	104.68	64,412	0*	0.51
Math	0.16	0.15	0.16	101.46	46,476	0*	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		111.42	0*	
	PreTest	0.235	0.003	0.203	72.77	0*	
	TestIt	0.362	0.003	0.349	125.28	0*	111,020
English	(Constant)	0.324	0.003		101.66	0*	
	PreTest	0.193	0.004	0.172	45.53	0*	
	TestIt	0.283	0.004	0.273	72.28	0*	64,412
Math	(Constant)	0.142	0.003		49.24	0*	
	PreTest	0.293	0.005	0.241	59.95	0*	
	TestIt	0.480	0.004	0.458	114.12	0*	46,476

* Significant difference $p<.01$

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