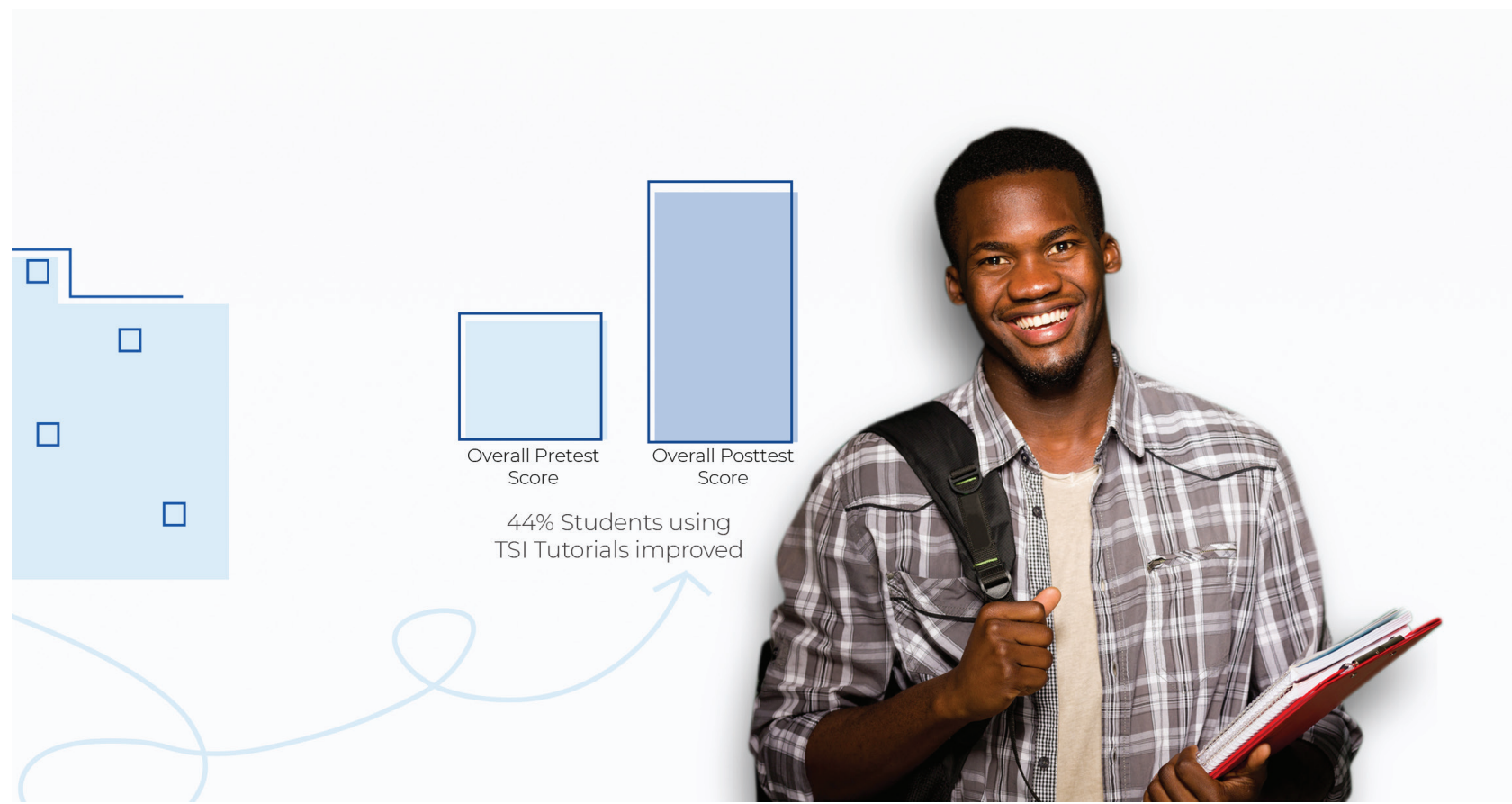




# A Study of the Impact of TSI Tutorials on Student Achievement

School Year 2017–2018

October 2018



## Introduction: Apex Learning Tutorials

The Texas Success Initiative Assessment (TSI Assessment) ensures students are ready for college-level coursework before they enroll in any college courses. Apex Learning TSI Tutorials were developed to improve student mastery of college-level skills and content established by the Texas College and Career Readiness Standards, while providing seamless support for students who struggle with grade-level content.

TSI Mathematics, Writing, and Reading Tutorials provide targeted instruction, practice, and review. Pretests and embedded formative assessments build an individualized course of study for each student that continually adapts to his or her unique learning needs. Students struggling with grade-level concepts are prescribed remedial instruction of skills down to the third-grade level. Students build depth of knowledge, confidence, and higher order skills through instruction and practice of skills essential to the test.

Unit-level pretests and posttests provide granular performance data that links students' performance to TSI strand descriptions and score ranges, 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 examine the impact of Apex Learning TSI Tutorials on student learning during the 2017-2018 school year. The analysis addresses the question: What impact does TSI Tutorials use make on achievement gain from pretest to posttest?

The results of 7,596 modules with pretests, Test Its, 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 TSI Tutorials overall and by subject.

Descriptive statistics and statistical results are located in the appendix.

## Findings

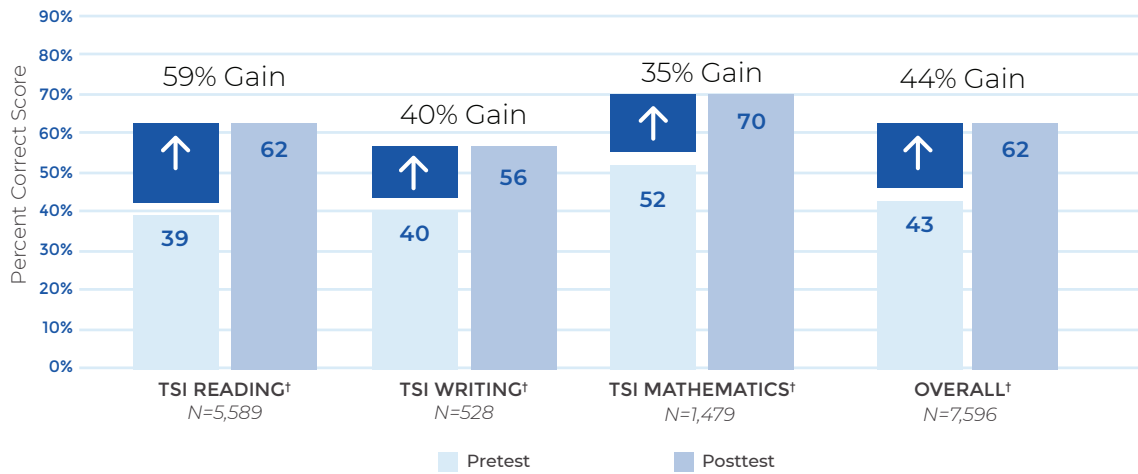
*Apex Learning TSI Tutorials significantly improve student performance on posttest assessments across reading, writing, and mathematics.*

The results of this study suggest that TSI Tutorials had a significant impact on student posttest achievement compared to pretest performance. Overall, students who used TSI Tutorials improved posttest scores by 44%.

- TSI Reading Tutorials improved scores by 59%.
- TSI Writing Tutorials improved scores by 40%.
- TSI Mathematics Tutorials improved scores by 35%.

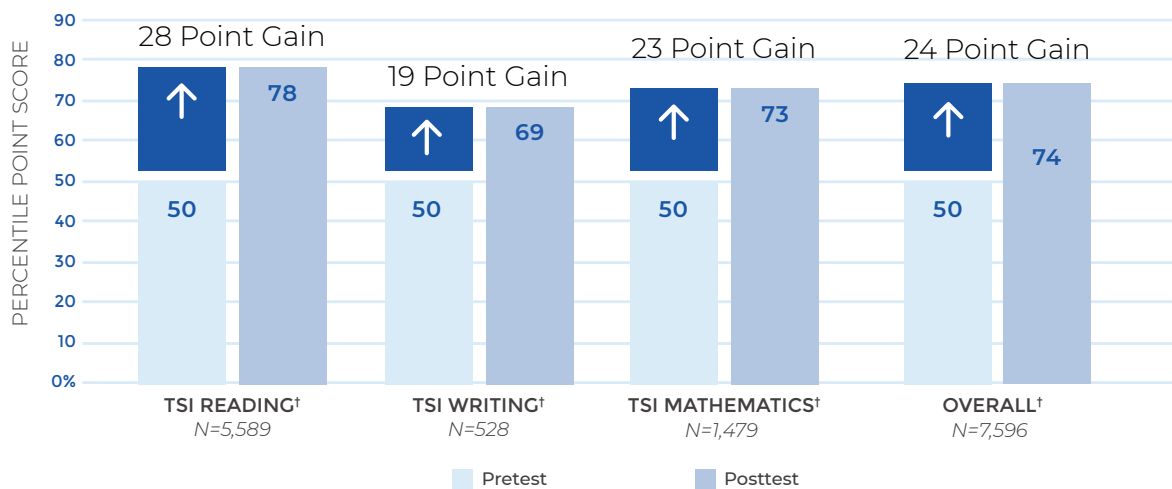
Figures 1 and 2 illustrate the pretest and posttest scores by percentage point gain and percentile gain.

**Figure 1**  
Average Percent Correct Score Gain



Achievement gains ranged from 16 to 23 percentage points by Tutorial (Mathematics, Reading, or Writing) and 19 percentage points overall.

**Figure 2**  
Average Percentile Score Gain



Achievement gains ranged from 19 to 28 percentile points by Tutorial (Mathematics, Reading, or Writing) and 24 percentile points overall.

Tables 1 and 2 located in the appendix contain descriptive and paired t-test statistics.

## Study Description

### Study Design

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

### Participants

During the 2017-2018 school year, students across Texas used over 33,000 TSI modules. Student enrollments with completed unit pretests, 100% of unit modules, and unit posttests were included in the analytical dataset.

### Data Preparation

Apex Learning provided 33,833 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 posttest score reported at the module level was significantly greater than the 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. The results of studies using this design are limited by not having a comparison group to control for events that could impact posttest performance that are not attributable to the intervention. Events not controlled for by this study design include participant maturation, instrument decay, and regression to the mean.

### Outcome Measures

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

## Appendix

Table 1: Module Level Descriptive Statistics								
Subject		Modules	Initials Pretest Score		Max Test It Score		Max Posttest Score	
		<i>N</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
English	TSI Reading	5,589	38.64	30.32	71.00	29.68	62.12	32.70
	TSI Writing	528	40.22	30.64	61.63	31.90	55.50	33.96
Math	TSI Mathematics	1,479	51.52	29.09	70.78	28.70	69.72	31.01
Combined		7,596	43.46	30.01	67.81	30.09	62.45	32.56

Table 2: Paired-Samples T-Tests						
Subject		Paired Differences Mean	<i>t</i>	<i>df</i>	<i>Sig. p</i>	Effect Size D
English	TSI Reading	23.48	44.493	5,588	0.00 <sup>†</sup>	0.77
	TSI Writing	15.28	9.337	527	0.00 <sup>†</sup>	0.50
Math	TSI Mathematics	18.20	23.521	1,478	0.00 <sup>†</sup>	0.63
Combined		18.99	50.554	7,595	0.00 <sup>†</sup>	0.63

<sup>†</sup> Statistically significant,  $p < .000$

*t* = Paired samples t-test



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