

Improving Student Learning Through Online Learning Tools:

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# A Study of the Impact of USATestprep Use on Student Achievement

2011



*This study was conducted by SEG Measurement, an independent educational research firm located in New Hope, Pennsylvania.*

## A Study of the Impact of USATestprep Use on Student Achievement

### Executive Summary

#### Introduction

Improving students' academic skills, particularly in the core content areas of language arts and mathematics remains a critical part of the educational mission. The importance of student reading and mathematics skills is underscored by No Child Left Behind (NCLB). One component of NCLB requires the annual assessment of all students' language arts and mathematics skills. Students in grades 5-8 and high school are assessed and schools are held accountable for the results.

As schools seek to develop student reading and mathematics skills and meet the mandates of NCLB, they are looking for solutions that will assist them in achieving these goals. USATestprep offers a technology based solution designed to help schools in developing student academic skills.

During the 2010-2011 school year, SEG Measurement conducted a year-long, multi-site study with approximately 1,100 9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> grade students, in approximately 40 classrooms, in South Carolina and Alabama. The goal of the study was to evaluate the impact of USATestprep on student achievement. This report describes this study and presents the results.

The results show that students who use USATestprep learn significantly more than students who do not use USATestprep. Students who used USATestprep, showed about one half to one year more of growth in Language Arts and in Mathematics, than students who did not use USATestprep.

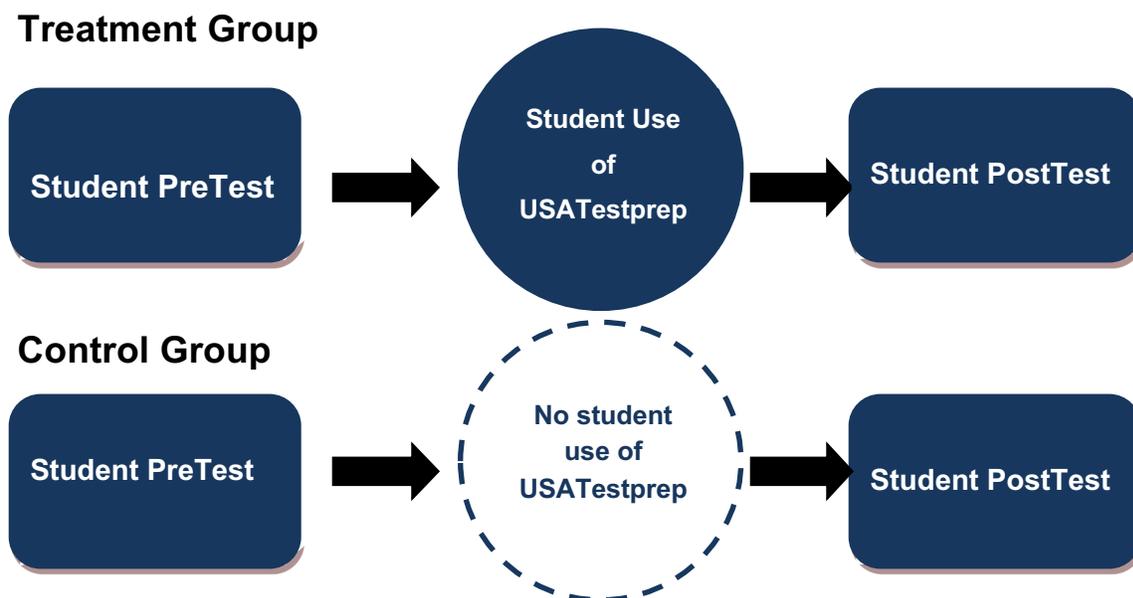
#### Study Design

The primary question answered by this study is: Do students in grades 9, 10, and 11 who use USATestprep show larger gains in Reading Comprehension and Mathematics skills than students who do not use USATestprep? The study also explored potential differences in growth between boys and girls and among students of different ethnic backgrounds.

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A quasi-experimental design was used to compare two groups of students, similar in ability. The Treatment Group consisted of students who used USATestprep; the Control Group consisted of students who did not use USATestprep. The students in both groups were administered a pre-test at the beginning of the year and a post-test at the end of the year to evaluate the impact of USATestprep use on their Reading Comprehension and Mathematics skills. This design is illustrated below.

Figure 1: Study Design



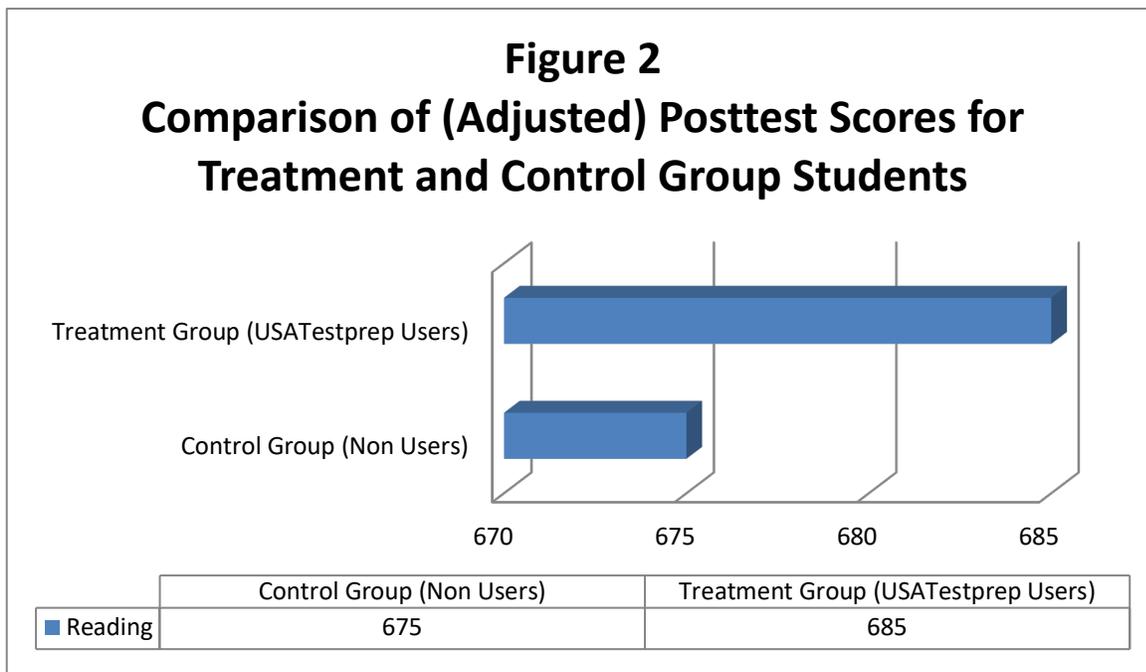
The study compared the growth in Reading Comprehension and Mathematics Stanford 10 Achievement Test™ scores from the beginning of the school year to the end of the school year. The results from the posttest were compared statistically, controlling for initial ability as measured by the pretest, to determine the level of growth in Reading Comprehension and Mathematics skills. Teachers of students in the Treatment Group reported that students used USATestprep about one to four hours weekly.

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**Results**

Students using USATestprep showed greater academic growth than those students who did not use USATestprep.

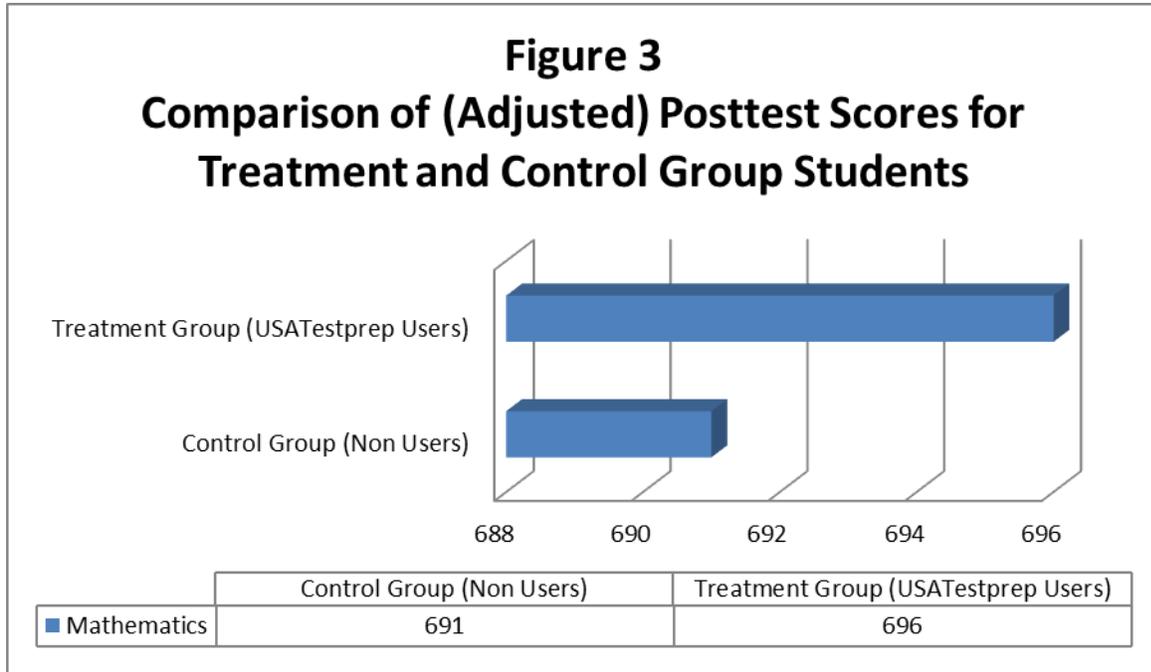
**Reading Comprehension.** Students using USATestprep (Treatment Group) showed statistically greater gains in Reading Comprehension than the Control Group. The Treatment Group students showed substantially more growth in Reading Comprehension (10 scale score points; Effect Size=.23) than the Control Group students (see Figure 2). This means that, on average, students using USATestprep showed about a year's more growth in Reading than their peers in classes where USATestprep was not used.



**Mathematics.** Students using USATestprep (Treatment Group) also showed statistically greater gains in Mathematics than the Control Group. The Treatment Group students showed

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substantially more growth in Mathematics (5 scale score points; Effect Size=.19) than the Control Group classes (see Figure 3). This means that, on average, students using USATestprep showed nearly a half a year's more growth in Mathematics than their peers in classes where USATestprep was not used.



These effects indicate that using USATestprep has a substantial impact on student Reading Comprehension and Mathematics skills growth. The solution was found to be equally effective for boys and girls and for students of different ethnicities.

### Summary

Based on a year-long, multi-state study, students using USATestprep, to improve their academic skills, showed substantially greater growth in both Reading and Mathematics than students who did not use USATestprep. Students using USATestprep showed about one half to one year more academic growth than students who did not use USA Testprep. The study also found that USATestprep is equally effective for boys and girls and for students of different ethnic backgrounds.

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The findings of this study provide substantial support for the effectiveness of USATestprep in improving student Reading Comprehension and Mathematics skills.

Improving Student Learning Through Online Learning Tools:

# A Study of the Effectiveness of USATestprep Use on Student Achievement

## Overview/Background of the Study

Improving students' academic skills, particularly in the core content areas of language arts and mathematics remains a critical part of the educational mission. The importance of student reading and mathematics skills is underscored by No Child Left Behind (NCLB). One component of NCLB requires the annual assessment of all students' language arts and mathematics skills. Students in grades 5-8 and high school are assessed and schools are held accountable for the results.

As schools seek to develop student reading and mathematics skills and meet the mandates of NCLB, they are increasingly looking for solutions that will assist them in achieving these goals.

USATestprep offers a technology based solution designed to help schools in achieving these goals.

## Effectiveness Study Goals and Overview

This report describes a study conducted during the 2010-2011 school year to evaluate the impact of USATestprep on student achievement. Specifically, the study compares the growth in academic skills of students in grades 9, 10 and 11<sup>1</sup> in classes that used USATestprep (Treatment Group) to those in classes that did not use USATestprep (Control Group). The study compared student academic growth in the Treatment and Control Groups. We compared the growth in Reading

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<sup>1</sup> The study included a small number of 12<sup>th</sup> grade students as well. For the purposes of the analyses, they were treated as 11<sup>th</sup> graders.

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Comprehension and Mathematics attained by students in the Treatment Group and Control Group between the beginning and end of the 2010-2011 school year, as measured by the growth in Stanford 10 Achievement Test™ Abbreviated Battery (SAT 10) scores.

### Research Questions

This study investigated the following questions:

1. Do students in grades 9, 10 and 11 that use USATestprep show larger gains in Reading Comprehension and Mathematics skills than students who do not use USATestprep?
2. Are there any differences in the Reading Comprehension and Mathematics skills between boys and girls that use USATestprep as compared to those that do not use USATestprep?
3. Are there any differences in the Reading Comprehension and Mathematics skills among students of different ethnicities that use USATestprep as compared to those that do not use USATestprep?

### Student Sample

Between September 2010 and June 2011, approximately 1,100 students in 40 classrooms in South Carolina and Alabama participated in a controlled study of USATestprep effectiveness. Students enrolled in classes whose teachers used USATestprep constituted the Treatment Group. Students enrolled in classes whose teachers did not use USATestprep constituted the Control Group. There were approximately 717 students in the Treatment Group and approximately 351 students in the Control Group. Table 1 shows the number of students in each gender, ethnic, and grade category. (The total number of students listed for each background variable may be different since some schools were unable to provide complete background information.)

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Table 1. Demographic Profile of Student Participants

Variable	Number (N) of Students	Percentage of Students
<b>GENDER</b>		
Male	560	53%
Female	499	47%
<b>Total (All Gender)</b>	<b>1059</b>	
<b>ETHNICITY</b>		
Caucasian	601	59%
African American	339	33%
Other	84	8%
<b>Total (All Ethnicity)</b>	<b>1024</b>	
<b>GRADE</b>		
Grade 9	209	20%
Grade 10	199	19%
Grade 11	660	61%
<b>Total (All Grades)</b>	<b>1068</b>	

In some cases, teachers did not provide complete background information for a student or a student did not take one of the tests included in the analyses. Where data was missing, the student's results were eliminated from those analyses.

### Comparability of Study Groups

It is very important in a study comparing student academic growth to establish at the outset that the Treatment Group and Control Group are similar, particularly with respect to student academic ability, the outcome of interest. Demonstrating baseline equivalence of the sample (treatment and control groups) minimizes potential bias from selection in quasi-experimental designs that can alter effect size estimates. If the Treatment Group and the Control Group are not similar, we cannot be sure if the growth we see is due to the treatment (in this case, use of USATestprep) or the result of some differences in the individuals that existed before we conducted the study.

Ideally, this matching is accomplished by sampling study participants of similar reading and math ability. However, any observed differences can be adjusted for statistically using analysis of

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covariance (ANCOVA). The Treatment Group and Control Group were compared with respect to initial Reading Comprehension and Mathematics ability, as well as their gender and ethnicity. The results indicate that the groups were similar in ability and background (see Tables 2 and 3).

**Ability Comparison.** The SAT 10 pretest scores were used to compare the initial Reading Comprehension and Mathematics levels for students in both the Treatment and Control Groups. The Treatment and Control Groups were comparable in ability. There were no statistically significant differences in the Means between the Treatment and Control groups for Reading Comprehension ( $F=3.69$ ,  $df=1/621$ ,  $p<.06$ ) or Mathematics ( $F=.04$ ,  $df=1/621$ ,  $p<.85$ ).

**Gender and Ethnicity.** The number of female and male students in both the Treatment and Control were computed and compared (see Table 2). A statistical comparison of the two study groups shows that the Treatment Group and Control Group were comparable with respect to gender. There were no statistical differences in the expected and observed frequencies for gender (chi square =3.58,  $df=2$ ,  $p<.17$ ).

**Table 2. Comparison of the Gender Composition of the Treatment and Control Group**

STUDY GROUP	Gender		
	Female	Male	Total
Treatment Group	199	200	402
Control Group	122	97	219
Total	321	297	621

The number of students of different ethnicity in both the Treatment and Control were computed and compared (see Table 3). A statistical comparison of the two study groups shows that there was a statistically significant difference in the ethnic composition of the Treatment Group and Control Group (chi square =46.04,  $df=2$ ,  $p<.01$ ). The distribution of students indicates that the percentage of African American and students classified as Other in the Control Group was somewhat greater.

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However, the results suggest that there was still significant representation of all groups in both the Treatment and Control Group.

**Table 3. Comparison of the Ethnicity Composition of the Treatment and Control Group**

STUDY GROUP	Caucasian	African American	Other	Total
<b>Treatment Group</b>	237	123	30	390
<b>Control Group</b>	65	113	28	206
<b>Total</b>	302	236	58	596

### Description of the Pretest and Posttest

The academic growth of students was operationalized as the gains in Reading Comprehension and Mathematics ability between pre and posttest. The students participating in the study were measured using the Reading Comprehension and Mathematics Stanford Achievement Test™, Tenth Edition (SAT 10), Abbreviated Battery, Form A, 2002. The SAT 10 was used as both the pretest and posttest measure; students took the SAT 10 in September or October 2010 at the beginning of the school year and then again at the end of May or in June 2011 at the end of the school year.

The Reading Comprehension and Mathematics subtests of the SAT 10 were used for this study.

The Reading Comprehension subtest measures students' achievement within the framework of three types of materials or purposes for Reading: literary, informational, and functional text. Within each type of text, questions measure achievement in four modes of Comprehension: initial understanding, interpretation, critical analysis, and awareness and usage of Reading strategies. The Mathematics subtest measures the mathematics skills typically associated with the mathematics curriculum in US schools. Each subtest is 30 items in length (Stanford Achievement Test Series™, Tenth Edition, Technical Manual; Harcourt, 2002).

The SAT 10 measures students' skill levels on a single vertical scale ranging from 200-900. The scale-scores represent equal units; differences between scores at any point in the scale represent the

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same amount of achievement variation. This allows for an accurate comparison of changes over time. The scale is equivalent across forms and grade levels, to provide an accurate comparison across grade levels; a score at one grade level means that same thing at another grade level.

### Reliability and Validity

The reliability of the SAT 10 ranges from .89 to .97 (KR-20 reliability coefficient; Harcourt, 2002). Several validity studies conducted for the SAT 10 have found strong evidence for the validity of SAT 10 scores; for example, content expert review found strong alignment with important Reading skills. Strong relationships were found between the SAT 10 and other measures of Reading ability. For a more complete discussion of the SAT 10 reliability and validity, readers are referred to the SAT 10 Technical Manual (Harcourt, 2002).

### Description of the Treatment

The Treatment in this study was teacher's use of USATestprep. USATestprep, Inc. is an online resource to help students learn. Each of the USATestprep components is custom-designed to help high school and middle school students understand their state's required standards and prepare them for high-stakes, standardized tests. USATestprep has been helping teachers and students prepare for Graduation Exams, Grade-Level Tests and End-of-Course Assessments since 1998. USATestprep includes the following features and components:

- Practice exams that look and feel like the real thing
- Automatic grading
- Materials to create custom benchmark tests in a snap
- Easy ways to track everything your students do and focus on where they need help
- Exciting arcade-style games to keep students interested and engaged
- Interactive skill work to hone students' mastery
- Printable puzzles, worksheets, activities, and more

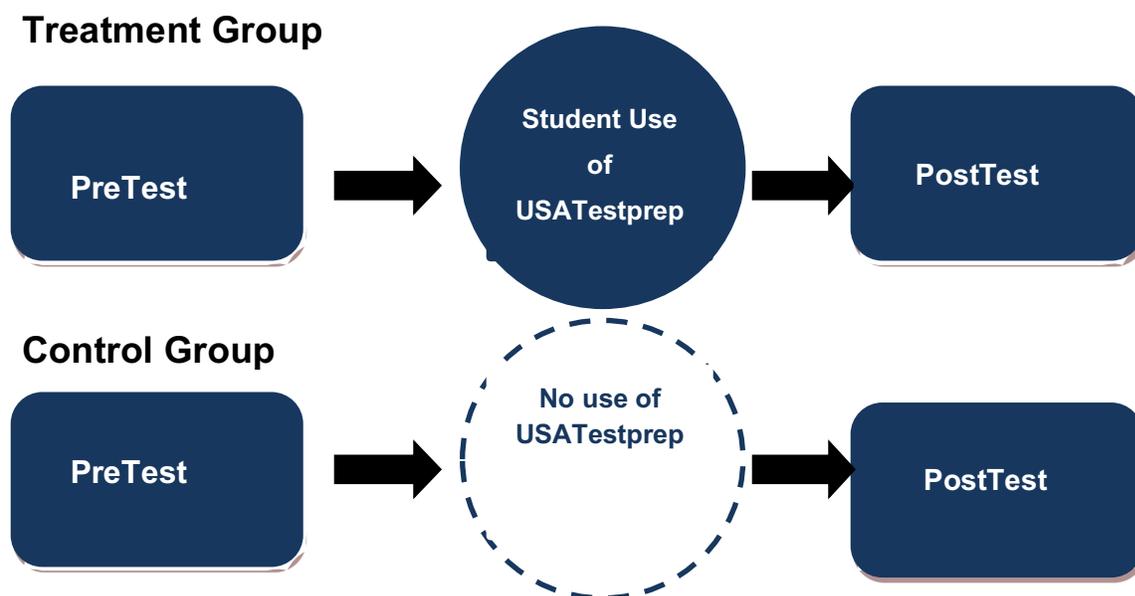
Students in the Treatment Group used USATestprep about one to four hours weekly, with most teachers reporting typical use of one hour per week.

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**Study Design**

The goal of this effectiveness study was to compare the academic growth of students who used USATestprep (Treatment) to students who did not use USATestprep (Control). Academic growth was measured using the Stanford 10 Reading Comprehension and Mathematics Tests. Students' growth in Reading Comprehension and Mathematics was measured by comparing their proficiency at the beginning of the school year (September and October 2010) and again at the end of the school year (May and June 2011). Students in both the Treatment Group and the Control Group were administered the SAT 10 test as a pretest at the beginning and as a posttest at the conclusion of the school year. Students received approximately 22-28 weeks of instruction between the pretest and posttest. Students in the Treatment Group used USATestprep, while those in the Control Group did not use USATestprep. The results were then compared statistically.

The study employed a pre-post, Treatment-Control Group design. Since the students were not randomly assigned to the groups, this is considered a quasi-experimental design (see Figure 4 below).

**Figure 4. Study Design**

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### Data Collection

At the outset of the study, teachers were asked to provide background information about the participating students in order to characterize the sample, compare the differences between the study groups and facilitate the analysis of the Reading Comprehension and Mathematics gains between the study groups. This information included:

- Student grade level
- Student gender
- Student ethnicity
- Study group membership (Treatment/or Control)

Teachers were also asked to provide some additional demographic and instructional information regarding Individual Education Plans (IEP) and disabilities. Due to the unavailability of information and/or privacy concerns, many teachers did not provide this additional information. Therefore, there was insufficient information to provide additional analyses examining these specific variables.

Teachers participating in the study were provided with SAT 10 test booklets and administration manuals for their grade level in September 2010. The teachers then administered the SAT 10 pretest (Reading Comprehension and Mathematics subtests) according to the administration instructions provided. The completed test booklets and answer sheets were then returned to SEG Measurement for processing. The answer sheets were scanned and entered into a database. Any questions that the students did not answer were scored as incorrect. Students answering fewer than four questions were removed from the analysis. All data was reviewed and checked for accuracy before scoring and analysis.

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At the conclusion of the school year, in May or in June 2011, following approximately 22-28 weeks of instruction, teachers administered the SAT 10 posttest (Reading Comprehension and Mathematics subtests). The SAT 10 pretest and posttest results were compared as a basis for evaluating the growth reported in this study.

### Findings

#### Measuring Growth

The growth in Reading Comprehension and Mathematics skills for the Treatment Group and the Control Group was compared using a statistical procedure known as analysis of covariance (ANCOVA). This approach provides an accurate way to compare growth over time controlling for any potential differences in student skills between the two study groups that may have been present at the beginning of the study. Any differences in skill levels between USATestprep Users Group (Treatment) and Control Group that may have existed at the beginning of the study were controlled to ensure that any differences in subsequent growth were the result of USATestprep use and not merely the result of differences that existed at the start of the study. Using this method, we were able to compare differences as if the two groups were matched in initial Reading and Mathematics proficiency. While no procedure can completely eliminate differences that may exist at the outset of a study, ANCOVA is widely recognized as an effective way to control for differences.

Only students for whom matched pretest and posttest results were available were included in the analysis. The analysis looked only at those students who had taken the SAT 10 at the beginning of the second semester of the school year (pretest) and those who had taken the SAT 10 at the end of the school year (posttest). Students who left the class during this period or who joined the class during this period were not included in the growth comparisons.

#### Comparison of Treatment Group Growth to Control Group Growth

The overall growth in Reading Comprehension and Mathematics skills as measured by the Reading Comprehension and Mathematics subtests of the SAT 10 for those students in the Treatment

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Group was compared to the Reading Comprehension and Mathematics subtests of those students in the Control Group. Multivariate Analysis of Covariance (MANCOVA) was used to evaluate the difference in a composite Reading Comprehension and Mathematics skill score (dependent variable) between the Treatment and Control Groups (independent variable) controlling for the initial Reading and Mathematics levels of the students (covariate). The SAT 10 pretest scores were used as the covariate to place students in the Treatment Group and Control Group on the same baseline. The comparisons were based on 400 Treatment Group students and 219 Control Group students for whom both pretest measures and both posttest measures were available.

The results show a significant difference in a composite of the SAT 10 Reading Comprehension and Mathematics subtest posttest scores between the Treatment Group and the Control Group ( $df=2/614$ ,  $F=3.06$ ,  $p<.05$ ) when initial Reading and Mathematics skills are controlled. Teachers use of USATestprep accounted for approximately 1% of the variation in a composite of the Reading Comprehension and Mathematics posttest scores. (Eta squared = .01). This means that about 1% of the growth in overall Reading and Mathematics skills can be explained by whether or not teachers used USATestprep. The results, using Pillai's Trace, are summarized in Table 4 below. (The results for Wilks' Lambda and Hotelling's T are not reported since, with only two groups, the results are the same as those shown for Pillai's Trace.)

**Table 4. Multivariate Analysis of Covariance Comparison of Treatment and Control Group Reading Comprehension and Math Posttest Scores**

Effect		Value	F	Hypothesis df	Error df	Significance	Partial Eta Squared
Intercept	Pillai's Trace	.436	236.88 <sup>a</sup>	2	614	.01	.44
Reading Pretest	Pillai's Trace	.124	43.35	2	614	.01	.12
Mathematics Pretest	Pillai's Trace	.059	19.21	2	614	.01	.06
Study Group	Pillai's Trace	.010	3.06	2	614	.05	.01

To provide a more complete understanding of these results for the separate Reading and Mathematics skill areas, the individual effects were examined separately using ANCOVA (see Table 5).

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**Table 5. Analysis of Covariance Comparison of the Treatment Group and Control Group Reading Comprehension and Mathematics Posttest Scores**

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Significance	Eta Squared
Corrected Model	Reading Posttest	52342	3	17447	28.14	.01	.12
	Mathematics Posttest	192508	3	64169	46.92	.01	.19
Intercept	Reading Posttest	288752	1	288752	465.63	.01	.43
	Mathematics Posttest	188103	1	188103	137.54	.01	.18
Reading Pretest	Reading Posttest	2300	1	2300	3.71	.06	.01
	Mathematics Posttest	112965	1	112965	82.60	.01	.12
Mathematics Pretest	Reading Posttest	18542	1	18542	29.90	.01	.05
	Mathematics Posttest	192	1	192	.14	.71	.01
Study Group	Reading Posttest	2827	1	2827	4.56	.03	.01
	Mathematics Posttest	5654	1	5654	4.13	.04	.01
Error	Reading Posttest	381379	615	620			
	Mathematics Posttest	841082	615	1367			
Total	Reading Posttest	2.984E	619				
	Mathematics Posttest	2.890E	619				
Corrected Total	Reading Posttest	433721	618				
	Mathematics Posttest	1033590	618				

**Table 6. Descriptive Statistics Comparison of The Treatment Group and Control Group Reading Comprehension and Mathematics Posttest Scores (Adjusted for Pretest Covariate)**

Dependent Variable	Group	Mean SAT 10	Standard Deviation SAT10	N
Reading Posttest	Treatment	685.43	41.16	400
	Control	675.82	39.75	219
	Total	682.03	40.90	619
Mathematics Posttest	Treatment	695.63	25.89	400
	Control	690.59	27.32	219
	Total	693.85	26.49	619

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### Reading Comprehension Growth

The SAT 10 Reading Comprehension subtest scores, for those students using USATestprep (Treatment Group) were compared to the SAT 10 Reading Comprehension subtest scores of those students who did not use USATestprep (Control Group). ANCOVA was used to evaluate the difference in Reading subtest scores (dependent variable) between the Treatment and Control Groups (independent variable) controlling for the initial reading proficiency levels of the students (covariate). The SAT 10 pretest scores were used as the covariate to place students in the Treatment Group and the Control Group on the same baseline.

The results show a significant difference in Reading Comprehension between the Treatment Group and the Control Group ( $df=1/619$ ,  $F=4.56$ ,  $p<.03$ ) when initial Reading proficiency is controlled. The average Reading Comprehension subtest score for students in the Treatment Group (Mean= 685.43) was significantly greater than the average Reading Comprehension subtest score achieved by students in the Control Group (Mean= 675.82). This represents an effect size of +.23 (Cohen's  $d$ ). The results are summarized in Table 5 and 6 (see above).

### Mathematics Growth

The SAT 10 Mathematics subtest scores, for those students in classes with teachers using USATestprep (Treatment Group) were compared to the SAT 10 Mathematics subtest scores of those students in classes whose teachers did not use USATestprep (Control Group). ANCOVA was used to evaluate the difference in Mathematics subtest scores (dependent variable) between the Treatment and Control Groups (independent variable) controlling for the initial mathematics proficiency levels of the students (covariate). The SAT 10 pretest scores were used as the covariate to place students in the Treatment Group and the Control Group on the same baseline.

The results show a significant difference in Mathematics between the Treatment Group and the Control Group ( $df=1/619$ ,  $F=4.13$ ,  $p<.04$ ) when initial Mathematics proficiency is controlled. The average Mathematics subtest score for students in the Treatment Group (Mean= 695.63) was significantly greater than the average Mathematics subtest score achieved by students in the Control

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Group (Mean= 690.59). This represents an effect size of +.19 (Cohen's d). The results are summarized in Table 5 and 6 (see above).

### Gender Results

We examined whether there were any differences in growth between male and female students between the Treatment and Control Groups (interaction effects). To this end, the overall growth in Reading and Mathematics skills for the Treatment Group was compared to the overall growth in Reading and Mathematics skills within the Control Group as measured by the SAT 10. MANCOVA was used to evaluate the difference in a composite reading and mathematics score (dependent variable) between the Treatment and Control Groups (independent variable) of different genders (independent variable) controlling for the initial skill levels of the students (covariate). The SAT 10 pretest scores were used as the covariate to place students in the Treatment Group and the Control Group on the same baseline. The gender comparisons were based on 321 male students and 295 female students.

There was no significant effect for the interaction between gender and study group membership ( $F=.36$ ;  $df=2/611$ ;  $p<.70$ ). This indicates that teachers use of USATestprep was equally effective with boys and girls. The results, using Pillai's Trace, are summarized in Table 7 (see below).

**Table 7. Multivariate Analysis of Covariance  
Comparison of Treatment and Control Group by Gender  
and Reading and Mathematics Posttest Scores**

Effect		Value	F	Hypothesis df	Error df	Significance	Partial Eta Squared
Intercept	Pillai's Trace	.438	237.83	2	611	.01	.08
Reading Pretest	Pillai's Trace	.127	44.46	2	611	.01	.37
Mathematics Pretest	Pillai's Trace	.051	16.26	2	611	.01	.52
Study Group	Pillai's Trace	.009	2.79	2	611	.06	.03
Gender	Pillai's Trace	.024	3.75	4	1224	.01	.01
Study Group by Gender	Pillai's Trace	.001	.36	2	611	.70	.00

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**Table 8. Descriptive Statistics Comparison of The Treatment Group and Control Group by Gender Reading Comprehension and Mathematics Posttest Scores (Adjusted for Pretest Covariate)**

Descriptive Statistics					
	Group	GENDER	Mean	Std. Deviation	N
Reading Posttest	Treatment	Male	697.10	24.478	199
		Female	693.85	27.083	198
		Total	695.63	25.887	397
	Control	Male	675.19	43.792	122
		Female	676.62	34.199	97
		Total	675.82	39.749	219
	Total	Male	679.13	40.589	321
		Female	684.89	41.115	295
		Total	682.03	40.896	616
Mathematics Posttest	Treatment	Male	697.10	24.478	199
		Female	693.85	27.083	198
		Total	695.63	25.887	397
	Control	Male	693.84	27.471	122
		Female	686.51	26.718	97
		Total	690.59	27.323	219
	Total	Male	695.86	25.664	321
		Female	691.44	27.139	295
		Total	693.85	26.492	616

### Ethnicity Results

We examined whether there were any differences in growth between students in different ethnic groups between the Treatment and Control Groups (interaction effects). To this end, the overall growth in Reading and Mathematics skills for the Treatment Group was compared to the overall growth in Reading and Mathematics skills within the Control Group as measured by the SAT 10. MANCOVA was used to evaluate the difference in a composite reading and mathematics score (dependent variable) between the Treatment and Control Groups (independent variable) of different ethnicities (independent variable) controlling for the initial skill levels of the students (covariate).

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The SAT 10 pretest scores were used as the covariate to place students in the Treatment Group and the Control Group on the same baseline. The ethnic comparisons were based on 300 Caucasian students, 236 African American Students and 58 students classified as Other.

There was no significant interaction effect between ethnicity and study group membership ( $F=1.99$ ;  $df=2/585$ ;  $p<.09$ ). This indicates that teachers' use of USATestprep was equally effective for students of different ethnic groups. The results, using Pillai's Trace, are summarized in Table 9 (see below).

**Table 9. Multivariate Analysis of Covariance  
Comparison of Treatment and Control Group by Ethnicity  
and Reading and Mathematics Posttest Scores**

Effect		Value	F	Hypothesis df	Error df	Significance	Partial Eta Squared
Intercept	Pillai's Trace	.449	238.19	2.000	585	.01	.45
Reading Pretest	Pillai's Trace	.113	37.38	2.000	585	.01	.11
Mathematics Pretest	Pillai's Trace	.056	17.48	2.000	585	.01	.06
Study Group	Pillai's Trace	.002	.690	2.000	585	.50	.01
Ethnicity	Pillai's Trace	.025	3.76	4.000	1172	.01	.13
Study Group by Ethnicity	Pillai's Trace	.013	1.99	4.000	1172	.09	.01

**Table 10. Descriptive Statistics Comparison of The Treatment Group and Control Group by Ethnicity  
Reading Comprehension and Mathematics Posttest Scores  
(Adjusted for Pretest Covariate)**

Descriptive Statistics					
	Study Group	Ethnicity	Mean	Std. Deviation	N
Mathematics Posttest	Control	Caucasian	700.26	33.76	65
		African American	685.99	23.21	113
		Other	691.68	24.35	28
		Total	691.27	27.73	206

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	Treatment	Caucasian	700.26	24.16	235
		African American	687.61	27.17	123
		Other	697.13	23.64	30
		Total	696.01	25.79	388
	Total	Caucasian	700.26	26.47	300
		African American	686.83	25.31	236
		Other	694.50	23.93	58
		Total	694.36	26.50	594
Reading Posttest	Control	Caucasian	684.60	54.57	65
		African American	670.34	31.62	113
		Other	682.25	29.79	28
		Total	676.46	40.48	206
	Treatment	Caucasian	694.47	44.30	235
		African American	671.22	33.56	123
		Other	678.33	32.28	30
		Total	685.85	41.68	388
	Total	Caucasian	692.33	46.80	300
		African American	670.80	32.58	236
		Other	680.22	30.90	58
		Total	682.59	41.48	594

## A Study of the Impact of USATestprep Use on Student Achievement

### Summary and Discussion

During the 2010-2011 school year, SEG Measurement conducted a year-long, multi-site study with approximately 1,100 9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> grade teachers and students, in 40 classrooms, in South Carolina and Alabama, to evaluate the impact of USATestprep use on student achievement.

USATestprep provides a portfolio of online tools to assist students in improving their reading and mathematics skills.

The goal of this study was to evaluate the impact of USATestprep use on student learning. The results show that students who use USATestprep learn significantly more than students who do not use USATestprep.

Students who were USATestprep users, showed about a year more of growth in Language Arts and nearly a half year more of growth in Mathematics, than students who did not use USATestprep.

### Study Design

The primary question answered by this study is: Do students in grades 9, 10, and 11 show larger gains in Reading Comprehension and Mathematics skills if they use USATestprep? The study also explored potential differences in growth between boys and girls and among students of different ethnic backgrounds.

The study compared two groups of students, similar in ability. The Treatment Group consisted of students who used USATestprep; the Control Group consisted of students who did not use USATestprep. The students in both groups were administered a pre-test at the beginning of the year and a post-test at the end of the year to evaluate the impact of using USATestprep on their Reading Comprehension and Mathematics growth.

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The study compared the growth in Reading Comprehension and Mathematics Stanford 10 Achievement Test™ scores from the beginning of the school year to the end of the school year. The results from the pretest and posttest were compared statistically to determine the level of growth in Reading Comprehension and Mathematics skills.

Teachers of students in the Treatment Group reported that the students used USATestprep about one to four hours weekly, with most teachers reporting about one hour per week of use.

### Results

The Treatment Group students who used USATestprep showed substantial growth in Reading Comprehension and Mathematics during the course of the study. Students in the Treatment Group showed statistically greater gains in both Reading Comprehension and Mathematics than the Control Group. The Treatment Group students showed substantially greater gains in Reading Comprehension (10 scale score points; Effect Size= .23) and Mathematics (5 scale score points; Effect Size=.19) than the Control Group. This means that, on average, students in the USATestprep Classes showed about one half year to a year's more growth than their peers who did not use USATestprep. These estimates are based on the average gains seen by students at the 50<sup>th</sup> percentile at grades 9, 10 and 11 provided by Harcourt (2002).

These effects suggest that the use of USATestprep has a substantial impact on student Reading Comprehension and Mathematics skills growth. The solution was found to be equally effective for boys and girls and for students of different ethnicities.

For comparison, the effect size for Reading Comprehension and Mathematics is comparable to the typical effect sizes seen in other studies of instructional programs. (For example, Slavin (2008) in his comprehensive synthesis of middle and high school Reading program research studies reports a mean effect size for instructional-process Reading programs of +.21.)

## A Study of the Impact of USATestprep Use on Student Achievement

We also examined the impact of using USATestprep on both boys and girls and among students of different ethnic backgrounds to determine if the solution was differentially effective for major groups within the population. The solution was found to be equally effective for boys and girls and for students of different ethnicities. In short, the interaction between USATestprep use and gender and ethnicity was not statistically significant.

### Summary

Students who used USATestprep showed substantial growth in Reading Comprehension and Mathematics during the course of the study. Students in Treatment Group classes showed about 5-10 more points of growth than their peers in the Control Group who did not use USATestprep. This is equal to about one half to one year of growth. The study also found that USATestprep is equally effective for boys and girls and for students of different ethnic backgrounds.

The findings of this study provide substantial support for the effectiveness of USATestprep in improving student Reading Comprehension and Mathematics skills.

*This research was supported by a grant from USATestprep.*