

The Impact of the Succeed in Math Tutorial Program on High School Proficiency Rates

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Executive Summary

The following report, *The Impact of the **Succeed in: Math!**[®] Tutorial Program on High School Proficiency Rates 2008*, describes the statistical analysis of test scores from the mathematics portion of the Nevada High School Proficiency Exam taken in Clark County, Nevada School District during the 2006-2007 academic year. The analysis compared test scores of students who used **Succeed in: Math!**[®] software with those who did not.

The results demonstrate that program use had a positive impact on test scores for all groups studied, from first time test takers (10th graders) to non-proficient seniors who had failed the math portion of the proficiency exam multiple times.

We find that students who use the tutorial program score on average 6 points higher than comparable students on the HSPE. The impact of using the tutorial program is highest, +11 points, for tenth graders. Our findings also suggest that students who use the tutorial program improve their chances of success on the HSPE by an average 6 percent compared to similar students who do not use the tutorial. The likelihood of success is highest, +12 percentage points, for tenth graders who used the tutorial program.

For the students who did not use SCIM, the benefit of using the tutorial program would translate in an additional 1721 students passing the HPSE and increase the overall success rate by 5 percent. For the tenth graders who did not use SCIM, the benefit of using the tutorial program would translate in an additional 1675 students passing the HPSE and increase the success rate of tenth graders by 9 percent.

With the enhancement of content standards mandated for testing, beginning with the 2009-2010 academic years (from 8th to 10th grade level), not using the program could prove to be devastating.

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1. Purpose of the Study¹

The *Succeed in Math!*® (SCIM) tutorial software combines assessment and remediation into one program that measures a student's math skills and identifies weaknesses, creating a customized tutoring plan for that student. This study performs a statistical analysis of the merits of the SCIM tutorial program with respect to improving students' performance on the Nevada High School Proficiency Exam (HSPE). Using data from the Clark County School District (CCSD), the study investigates the following two questions:

- (1) Did students who used the SCIM tutorial program improve their test score on the HSPE, when compared to students of similar characteristics who did not use the program?
- (2) Did students who used the SCIM tutorial program improve their chances of passing the HSPE, when compared to students of similar characteristics who did not use the program?

The remainder of this report is organized as follows. Section 2 describes the data used in the analysis. Section 3 outlines the empirical methodology. The results of the analysis are presented in section 4. Section 5 concludes.

2. Data

The data used in the analysis were provided by the CCSD. The data contain HSPE score results for every student in the district during the 2006-2007 academic year. The data also provide information on whether each student used the SCIM tutorial program during the academic year. A limited set of student characteristics is also provided in the data.

Table 1 provides a summary of means for the main variables used in the analysis. The raw data contain 52,861 student observations for the 2006-2007 academic year. Of this total, only 31,491 students took the HSPE during the academic year.

The remainder of this section describes the main variables of the dataset. We group the variables into two types: main variables and control variables. The main variables include those variables that are of primary interest to this analysis. The control variables are used to control for observed differences among the students in the data.

¹ We are grateful to Rennae Daneshvary for her assistance in editing this report.

Table 1: Summary statistics

	All students		10th graders		11th graders		12th graders	
	Did not participate in the program	Participated in the program	Did not participate in the program	Participated in the program	Did not participate in the program	Participated in the program	Did not participate in the program	Participated in the program
Minority	0.512 (0.500)	0.514 (0.500)	0.473 (0.499)	0.425 (0.495)	0.562 (0.496)	0.509 (0.500)	0.591 (0.492)	0.596 (0.491)
Proficient in English	0.077 (0.267)	0.060 (0.238)	0.083 (0.276)	0.069 (0.253)	0.073 (0.260)	0.058 (0.233)	0.062 (0.241)	0.054 (0.227)
Over 18 years old	0.057 (0.232)	0.119 (0.324)	0.004 (0.064)	0.005 (0.073)	0.021 (0.143)	0.012 (0.107)	0.307 (0.461)	0.297 (0.457)
Male	0.488 (0.500)	0.405 (0.491)	0.505 (0.500)	0.417 (0.493)	0.465 (0.499)	0.381 (0.486)	0.453 (0.498)	0.411 (0.492)
Enrolled in special education	0.114 (0.317)	0.105 (0.306)	0.089 (0.285)	0.070 (0.256)	0.143 (0.350)	0.097 (0.296)	0.167 (0.373)	0.138 (0.346)
GIFTED	0.097 (0.296)	0.053 (0.224)	0.137 (0.343)	0.113 (0.316)	0.044 (0.206)	0.030 (0.170)	0.016 (0.126)	0.017 (0.128)
Dropped out during the school year	0.008 (0.091)	0.006 (0.076)	0.004 (0.059)	0.001 (0.036)	0.005 (0.072)	0.002 (0.041)	0.030 (0.172)	0.013 (0.113)
Last score	289.855 (58.800)	297.568 (44.859)	292.247 (65.275)	304.434 (56.500)	278.820 (46.633)	288.740 (37.136)	295.785 (43.054)	297.970 (36.122)
Proportion passing the proficiency exam	0.476 (0.499)	0.552 (0.497)	0.495 (0.500)	0.600 (0.490)	0.300 (0.458)	0.384 (0.487)	0.636 (0.481)	0.631 (0.483)
Count	29281	2210	18134	755	6318	607	4799	845

Standard deviations are in parentheses.
 Passing score is 305.

Main Variables

Program is an indicator variable equal to one for the observation if the associated student spent any time at all browsing through any of the software's learning modules. From the 31,491 students who took the HSPE, 2,210 (7 percent) used the SCIM tutorial program. Observations for these students were assigned a value of one for *program*. The tutorial program includes a pretest module which measures skill level and identifies those areas that the student needs to focus on. A customized study plan is then created from the program's library of content modules. Students who only took the pretest, as well those who did not access the tutorial program, were assigned a zero value for *program*.² The raw data provided this qualitative information. A value of two was assigned to those students who took the pretest only.

Last Score is one of the dependent variables examined in the analysis. For any given observation, this variable is equal to the latest scaled score recorded in the raw data for the student. For instance, if a student attempted the proficiency exam twice during the relevant school year, his or her second score was, according to our definition, the last score.

Pass/Fail is the second dependent variable examined in the analysis. For any given observation, this variable equals one if the student passed the proficiency exam on his or her final attempt at the exam. If a student did not pass, he or she received a value equal to zero for this variable.

Control Variables

Number of Tests Taken is a variable measuring the number of times a twelfth grade student attempted the HPSE. The raw data provide the scores for each time that a student takes the HSPE during the school year. This information was used to compute the number of times the HSPE was taken.

The students in the data were from grades 9 through 12. Of the student who took the HSPE, only 32 (0.11 percent) were from grades 9. Hence these students were dropped from the sample for lack of sufficient observations. Three indicator variables were created, one corresponding to each of the remaining grades, ten, eleven, and twelve.

² Those students who took the pretest and passed were not asked to proceed further with the software. Those students are also assigned a value of zero for the program participation variable.

Minority is an indicator variable equaling one if the student is a minority. Minority students were defined as those listed in the raw data as either Hispanic or African-American. All other students, including Whites, Asians and American Indians, were assigned a zero value for minority.

Proficient in English is an indicator variable that equals one if the student is listed as English proficient in the raw data. This definition also includes students listed as redesignated English proficient. Students with limited proficiency, students pending assessment, or those who were described as not proficient received a zero value for the variable.

Dates of birth and the school year in consideration were both included in the raw data. From these, it was possible to extract student age and include a binary variable that equals one if the student was over 18 years of age at the time. To compute a student's age, the year of birth was subtracted from 2007. *Over 18 Years Old* is an indicator variable that equals one if the student is over 18 year of age.

A gender variable, which specified whether the student is male or female, was provided in the raw data. This variable was transformed into an indicator variable, *male*, which is set to one if the student is a male and zero if the student is a female.

Special education is an indicator variable equal to one for the observation if any information on special education placement was recorded for the associated student. All other students were assigned a value equal to zero.

Gifted and Talented Education (GATE) students were identified in the raw data by a unique code assigned to those students. *Gifted* is an indicator variable which equals one if the student is a GATE student.

Dropout variable is an indicator variable equal to one if the student dropped out of school during the school year in consideration. This information was provided in the raw data.

3. Empirical Methodology

The goal of this analysis is to identify the impact of using the SCIM tutorial program on the students' test score and success on the HSPE. To achieve this goal we used student performance data from the HSPE and use the SCIM tutorial program during the academic year 2006-2007. Our analysis follows the program-evaluation framework. We divide the students into two groups, a treatment group and a comparison group. The test group consists of students who used the SCIM tutorial program, whereas the comparison group is made of the students who did not use the program. The impact of the SCIM tutorial program on the HSPE score is measured

as the mean difference in the scaled score for the treatment and comparison group. This is estimated using the following regression specification:

$$\text{last score}_i = \delta * \text{program}_i + \gamma * \text{controls}_i + \varepsilon_i, \quad (1)$$

Where *last score_i* is the student *i*'s final scaled score on the HSPE, *program* is equal to one if the student used the SCIM tutorial program, and *controls* is a vector of exogenous variables that control for observed differences among the students in the data.³ δ and γ are parameters to be estimated and ε is a disturbance term. The parameter δ identifies the mean impact of the SCIM tutorial program on students' HSPE score. The expected sign of δ is positive, as we would expect that students who use the program improve their performance on the HSPE. Similarly, we can also characterize the impact of the SCIM tutorial program on a student's likelihood to succeed on the HSPE as follows:

$$\text{pass/fail}_i = \delta * \text{program}_i + \gamma * \text{controls}_i + \varepsilon_i, \quad (2)$$

where pass/fail is an indicator variable that equals one if the student's last recorded attempt at the HSPE was a success. The parameter δ in equation (2) measures the impact of the SCIM tutorial program on the probability that a student succeeds on the HSPE.

The correct identification of the impact of the SCIM tutorial program as outlined in equations (1) and (2) is hampered by the fact that the student's ability is not observed in the data. The models in equations (1) and (2) do not control for the student's ability and, hence, assume that able students, those with good grades, and less able students, those with poor grades, are equally likely to use the tutorial program. However, it is likely that students who continuously perform well in class during the academic year will have higher HSPE scores than those students who struggle in class. It also might be the case that the good students are less likely to use the tutorial program because they are well prepared. If that is the case, then the parameter δ in equations (1) and (2) will underestimate the effect of the SCIM tutorial program.

We can properly address the potential underestimation of the impact of the SCIM tutorial program by controlling for the student's grade point average during the academic year. Unfortunately, this information is not available in the data. As an alternative, we use the repeat test scores provided for the twelfth graders to control for student's ability. We break the twelfth graders sample into four subsamples based on the number of times (one time, two times, three times, and four times) each

³ The reader is referred to section 2 for the description of the data.

student took the HSPE during the academic year 2006-2007. We then estimate the models in equations (1) and (2) on the subsamples of repeat takers (two times, three times, and four times). To the extent that students of poor ability are more likely to take the HSPE multiple times, restricting the sample to multiple takers can control for student's ability.

4. Results

Tables 2 through 4 summarize the results of the estimation. Additional tables that provide more detail on the results are provided in the appendix attached to the end of the document. Table 2 provides a summary of the estimated impact of the SCIM tutorial program for all students and by grade level. All of the estimates are statistically significant and have the expected positive sign. The first row of Table 2 represents the estimated impact of the SCIM tutorial program on the HSPE score. This is the estimate of the parameter δ in equation (1). We find that students who use the tutorial program score on average 6 points higher than comparable students on the HSPE. Given the current distribution of scores for the students who did not use SCIM, the benefit of using the tutorial program would translate in an additional 1721 students passing the HPSE and increase the overall success rate by 5 percent. The impact of using the tutorial program is highest, +11 points, for tenth graders. For the tenth graders who did not use SCIM, the benefit of using the tutorial program would translate in an additional 1675 students passing the HPSE and increase the success rate of tenth graders by 9 percent.

Table 2: Summary of the impact of the program on all grades

	All Grades	10th Graders	11th Graders	12th Graders
Impact on Test Score	+6 pts.*	+11 pts.*	+7 pts.*	+6 pts.*
Impact on Probability of Success	+6%*	+12%*	+7%*	+9%*

* statistically significant

The bottom row of Table 2 provides the estimated impact of the SCIM tutorial program on a student's likelihood to succeed on the HSPE. This is the estimate of the parameter δ in equation (2). We find that students who use the tutorial program improve their chances of success on the HSPE by an average 6 percent compared to similar students who do not use the tutorial. The likelihood of success is highest, +12 percentage points, for tenth graders who used the tutorial program.

Table 3 summarizes the impact of the SCIM tutorial program for twelfth graders. The estimated impact is computed for all twelfth graders as well as for those twelfth graders who took the HSPE twice, three times and four times, respectively. This allows us to control for students' ability. To the extent that less able students, i.e., those who perform poorly in class, tend to fail on their first try, focusing on repeat takers will allow us to partially control for the underestimation of the impact of the SCIM tutorial program.

Table 3: Summary of the impact of the program on twelfth graders

	All twelfth graders	Two-Time Takers ¹	Three-Time Takers ²	Four-Time Takers ³
Impact on Test Score	+6 pts.*	+3 pts.	+10 pts.*	+9 pts.*
Impact on Probability of Success	+9%*	+4%	+13%*	+14%*

* statistically significant

¹ Twelfth graders who took the proficiency exam twice.

² Twelfth graders who took the proficiency exam three times.

³ Twelfth graders who took the proficiency exam four times.

The findings in Table 4 confirm the intuition that incorporating information on student in-class performance would increase the magnitude of the program's impact. For example, the three-time and four-time takers increase their likelihood of success by 13 to 14 percent as compared to only 9 percent for the average twelfth grader.

Further investigation of the SCIM program impact was initially based on anecdotal facts. Teachers who use the program claim that it makes their work more effective as the tutorial limits the guesswork from creating classroom tools that match the students' needs. Hence, we would expect a bigger impact of the tutorial program on students whose teachers also use the program. The second column of Table 4 shows the estimated impact of the program for students with a teacher who uses the program. We find that student users whose teachers are also users experience the same benefits from the program as other student users whose teachers do not use the tutorial. This finding may be due to the very low participation rate among teachers.⁴

⁴ Only 23 teachers participated in the program. These teachers are associated with 987 of the 31,500 students who took the HSPE. Only 78 of the 987 students with an involved teacher used the program.

Table 4: Further impact of the program

	All Grades	All Grades, Teacher Involvement ¹	All Grades, Five Hours or More ²	All Grades, Ten Hours or More ³
Impact on Test Score	+6 pts.*	+6 pts.*	+6 pts.*	+6 pts.*
Impact on Probability of Success	+6%*	+6%*	+6%*	+6%*

* statistically significant

¹ Students with recorded teacher involvement.

² Students who spent more than ten hours using the program.

³ Students who spent more than ten hours using the program.

Anecdotal evidence also suggests that students who spend more time using the tutorial program experience more success compared to other student users who spend less time. The last two columns of Table 4 show the estimated impact of the program for students who spend a minimum of five hours and ten hours. The results suggest that students who spend more time on the program do not experience greater success compared to other student users who spend less time on the tutorial. The lack of support for the anecdotal evidence may be due to the fact that we are not able to control for the student’s skill level, which is negatively correlated with the time spent using the program.⁵

5. Conclusions

This study has performed a statistical analysis on the merits of the *Succeed in Math!*® (SCIM) tutorial program with respect to improving students’ performance on the Nevada High School Proficiency Exam (HSPE). We find that students who use the tutorial program score on average 6 points higher than comparable students on the HSPE. The impact of using the tutorial program is highest, +11 points, for tenth graders. Our findings also suggest that students who use the tutorial program improve their chances of success on the HSPE by an average 6 percent compared to similar students who do not use the tutorial. The likelihood of success is highest, +12 percentage points, for tenth graders who used the tutorial program.

⁵ In other words, students with high math grades do not need as much help as the students who have poor math grades.

Given the current distribution of scores for the students who did not use SCIM, the benefit of using the tutorial program would translate in an additional 1721 students passing the HPSE and increase the overall success rate by 5 percent. For the tenth graders who did not use SCIM, the benefit of using the tutorial program would translate in an additional 1675 students passing the HPSE and increase the success rate of tenth graders by 9 percent.

These results should be interpreted as a lower bound for the true impact of the SCIM tutorial program. This is because information on the students' skill levels is not taken into account in the analysis. Controlling for students' skill levels using class-performance measures, such as GPA, should result in a bigger impact.

Appendix

Table 5A: The impact of the program on test scores by grade

	All	10th Graders	11th Graders	12th Graders
Program	6.005*** (1.094)	11.02*** (1.996)	7.193*** (1.700)	5.712*** (1.348)
Minority¹	-26.56*** (0.564)	-33.91*** (0.804)	-17.25*** (0.976)	-8.578*** (0.977)
Proficient in English	5.350*** (1.049)	6.847*** (1.439)	3.604* (1.877)	3.001 (1.994)
Over 18 years old	-8.298*** (1.303)	-45.11*** (6.127)	-16.69*** (3.433)	-4.928*** (1.033)
Male	6.808*** (0.556)	8.321*** (0.785)	6.126*** (0.974)	0.582 (0.973)
Enrolled in special education	-67.10*** (0.887)	-79.85*** (1.396)	-56.01*** (1.408)	-47.36*** (1.327)
GATE student	48.93*** (0.974)	49.94*** (1.168)	30.28*** (2.379)	11.63*** (3.756)
Dropped out during the school year	-33.42*** (3.084)	-55.08*** (6.702)	-29.41*** (6.878)	-30.80*** (2.900)
Number of times the student took the proficiency exam				-7.879*** (0.354)
Grade 10	-20.58*** (0.859)			
Grade 11	-23.14*** (0.955)			
Constant term	321.2*** (0.893)	304.2*** (0.725)	292.6*** (0.907)	328.8*** (1.227)
Number of Obs.	31458	18889	6925	5644
R²	0.29	0.318	0.247	0.289

Ordinary least-squares regressions. Dependent variable is HSPE scaled score.
Standard errors in parentheses.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

¹ A minority is defined as Hispanic or African-American.

Table 6A: The impact of the program on test scores for twelfth graders

	All twelfth graders	Two-Time Takers ¹	Three-Time Takers ²	Four-Time Takers ³
Program	5.712*** (1.348)	3.181 (3.262)	10.13*** (3.251)	9.119*** (2.821)
Minority⁴	-8.578*** (0.977)	-9.136*** (2.336)	-8.716*** (2.527)	-8.490*** (2.472)
Proficient in English	3.001 (1.994)	-0.724 (4.204)	4.977 (5.242)	8.332 (5.363)
Over 18 years old	-4.928*** (1.033)	-0.750 (2.448)	-5.167* (2.653)	-3.926 (2.478)
Male	0.582 (0.973)	-3.065 (2.311)	1.899 (2.477)	3.875 (2.446)
Enrolled in special education	-47.36*** (1.327)	-50.58*** (3.151)	-50.91*** (3.151)	-39.60*** (2.677)
GATE student	11.63*** (3.756)	3.391 (9.990)	12.30 (12.26)	18.76 (16.68)
Dropped out during the school year	-30.80*** (2.900)	-41.02*** (5.792)	-26.88*** (9.243)	-11.27 (37.08)
Number of times the student took the proficiency exam	-7.879*** (0.354)			
Constant term	328.8*** (1.227)	313.1*** (2.374)	307.3*** (2.600)	296.8*** (2.618)
Number of Obs.	5644	989	928	1012
R²	0.289	0.252	0.257	0.203

Ordinary least-squares regressions. Dependent variable is HSPE scaled score.

Standard errors in parentheses.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

¹ Twelfth graders who took the proficiency exam twice.

² Twelfth graders who took the proficiency exam three times.

³ Twelfth graders who took the proficiency exam four times.

⁴ A minority is defined as Hispanic or African-American.

Table 7A: The impact of the program on test scores by various categories

	All Grades	All Grades, Minorities ¹	All Grades, Teacher Involvement ²	All Grades, Five Hours or More ³	All Grades, Ten Hours or More ⁴
Program	6.005*** (1.094)	8.854*** (1.564)	-0.994 (5.153)	6.090*** (1.160)	6.049*** (1.112)
Minority¹	-26.56*** (0.564)		-12.99*** (3.120)	-26.56*** (0.564)	-26.56*** (0.564)
Proficient in English	5.350*** (1.049)	6.367*** (1.275)	-2.056 (4.580)	5.350*** (1.049)	5.352*** (1.049)
Over 18 years old	-8.298*** (1.303)	-9.197*** (1.732)	-4.550 (13.01)	-8.296*** (1.303)	-8.294*** (1.303)
Male	6.808*** (0.556)	6.085*** (0.796)	6.112** (2.823)	6.807*** (0.556)	6.807*** (0.556)
Enrolled in special education	-67.10*** (0.887)	-68.13*** (1.263)	-47.87*** (4.709)	-67.10*** (0.887)	-67.10*** (0.887)
GATE student	48.93*** (0.974)	53.43*** (1.865)	36.47*** (6.675)	48.93*** (0.974)	48.93*** (0.974)
Dropped out during the school year	-33.42*** (3.084)	-32.05*** (3.972)	- -	-33.42*** (3.084)	-33.42*** (3.084)
Grade 10	-20.58*** (0.859)	-30.88*** (1.160)	2.884 (16.41)	-20.58*** (0.859)	-20.58*** (0.859)
Grade 11	-23.14*** (0.955)	-25.08*** (1.283)	7.570 (16.29)	-23.14*** (0.955)	-23.14*** (0.955)
Program and at least 5 hours				-0.695 (3.161)	
Program and at least 10 hours					-1.174 (5.462)
Constant term	321.2*** (0.893)	300.7*** (1.109)	270.9*** (16.51)	315.2*** (5.435)	309.2*** (7.561)
Number of Obs.	31458	16103	986	31458	31458
R²	0.29	0.226	0.143	0.290	0.290

Ordinary least-squares regressions. Dependent variable is HSPE scaled score.

Standard errors in parentheses.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

¹ A minority is defined as Hispanic or African-American.

² Students with recorded teacher involvement.

³ Students who spent more than ten hours using the program.

⁴ Students who spent more than ten hours using the program.

Table 8A: The impact of the program on probability of passing by grade

	All Grades	10th Graders	11th Graders	12th Graders
Program	0.0599*** (0.0126)	0.119*** (0.0198)	0.0740*** (0.0208)	0.094*** (0.018)
Minority¹	-0.253*** (0.00612)	-0.294*** (0.00767)	-0.171*** (0.0113)	-0.094*** (0.015)
Proficient in English	0.0356*** (0.0118)	0.0393*** (0.0146)	0.0219 (0.0221)	0.030 (0.030)
Over 18 years old	-0.112*** (0.0144)	-0.293*** (0.0606)	-0.117*** (0.0327)	-0.085*** (0.016)
Male	0.0702*** (0.00641)	0.0798*** (0.00825)	0.0629*** (0.0113)	-0.013 (0.015)
Enrolled in special education	-0.403*** (0.00678)	-0.438*** (0.00961)	-0.264*** (0.0103)	-0.409*** (0.020)
GATE student	0.426*** (0.00796)	0.445*** (0.00862)	0.327*** (0.0312)	0.187*** (0.050)
Dropped out during the school year	-0.355*** (0.0195)	-0.350*** (0.0546)	-0.218*** (0.0445)	-0.578*** (0.022)
Number of times the student took the proficiency exam				-0.179*** (0.006)
Grade 10	-0.316*** (0.00925)			
Grade 11	-0.411*** (0.00773)			
Number of Obs.	31458	18889	6925	5644
Pseudo R²	0.174	0.183	0.092	0.264

Marginal effects from a Logit regression. Dependent variable is the HSPE exam pass/fail outcome. Standard errors in parentheses.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

¹ A minority is defined as Hispanic or African-American.

Table 9A: The impact of the program on probability of passing for twelfth graders

	All twelfth graders	Two-Time Takers ¹	Three-Time Takers ²	Four-Time Takers ³
Program	0.094*** (0.018)	0.044 (0.042)	0.133*** (0.041)	0.144*** (0.040)
Minority⁴	-0.094*** (0.015)	-0.081*** (0.031)	-0.086** (0.034)	-0.114*** (0.035)
Proficient in English	0.030 (0.030)	0.004 (0.057)	-0.031 (0.074)	0.146* (0.076)
Over 18 years old	-0.085*** (0.016)	-0.071** (0.033)	-0.074** (0.037)	-0.081** (0.034)
Male	-0.013 (0.015)	-0.014 (0.031)	0.010 (0.034)	0.014 (0.034)
Enrolled in special education	-0.409*** (0.020)	-0.392*** (0.043)	-0.414*** (0.041)	-0.347*** (0.030)
GATE student	0.187*** (0.050)	0.139 (0.109)	0.164 (0.152)	0.288 (0.252)
Dropped out during the school year	-0.578*** (0.022)	-0.712*** (0.039)	-0.461*** (0.101)	
Number of times the student took the proficiency exam	-0.179*** (0.006)			
Number of Obs.	5644	989	928	1011
Pseudo R²	0.264	0.162	0.113	0.104

Marginal effects from a Logit regression. Dependent variable is the HSPE exam pass/fail outcome. Standard errors in parentheses.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

¹ Twelfth graders who took the proficiency exam twice.

² Twelfth graders who took the proficiency exam three times.

³ Twelfth graders who took the proficiency exam four times.

⁴ A minority is defined as Hispanic or African-American.

Table 10A: The impact of the program on probability of passing by various categories

	All Grades	All Grades, Minorities ¹	All Grades, Teacher Involvement ²	All Grades, Five Hours or More ³	All Grades, Ten Hours or More ⁴
Program	0.0599*** (0.0126)	0.0621*** (0.0167)	-0.0145 (0.0297)	0.0572*** (0.0133)	0.0575*** (0.0128)
Minority¹	-0.253*** (0.00612)		-0.105*** (0.0251)	-0.253*** (0.00612)	-0.253*** (0.00612)
Proficient in English	0.0356*** (0.0118)	0.0330** (0.0130)	-0.0328 (0.0243)	0.0356*** (0.0118)	0.0355*** (0.0118)
Over 18 years old	-0.112*** (0.0144)	-0.0893*** (0.0150)	0.144 (0.155)	-0.112*** (0.0144)	-0.112*** (0.0144)
Male	0.0702*** (0.00641)	0.0623*** (0.00813)	0.0509*** (0.0181)	0.0702*** (0.00641)	0.0702*** (0.00641)
Enrolled in special education	-0.403*** (0.00678)	-0.319*** (0.00741)	-0.0924*** (0.0150)	-0.403*** (0.00678)	-0.403*** (0.00678)
GATE student	0.426*** (0.00796)	0.476*** (0.0154)	0.284*** (0.0796)	0.426*** (0.00796)	0.426*** (0.00796)
Dropped out during the school year	-0.355*** (0.0195)	-0.257*** (0.0173)		-0.355*** (0.0195)	-0.355*** (0.0195)
Grade 10	-0.316*** (0.00925)	-0.338*** (0.0110)	-0.00675 (0.0918)	-0.316*** (0.00925)	-0.316*** (0.00925)
Grade 11	-0.411*** (0.00773)	-0.345*** (0.00812)	-0.156 (0.112)	-0.411*** (0.00773)	-0.411*** (0.00773)
Program and at least 5 hours				0.0224 (0.0367)	
Program and at least 10 hours					0.0654 (0.0641)
Number of Obs.	31458	16103	986	31458	31458
Pseudo R²	0.174	0.134	0.181	0.174	0.174

Marginal effects from a Logit regression. Dependent variable is the HSPE exam pass/fail outcome. Standard errors in parentheses.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

¹ A minority is defined as Hispanic or African-American.

² Students with recorded teacher involvement.

³ Students who spent more than ten hours using the program.

⁴ Students who spent more than ten hours using the program.

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