



The Preuss School at UCSD:
Academic Performance of the Class of 2010

December 5, 2011

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Executive Summary

This report presents information on the academic performance of students who graduated from the Preuss School in 2010 and comparison group students who applied to the school in 2003, but did not “win” acceptance to the school via a random lottery. We examine the performance of these two groups of students on the standardized tests they took in the year prior to application to the school, while in middle and high school, as well as their high school grade point averages, A-G course completion rates and high school exit exams. SAT scores, AP course completion rates and college-going information for The Preuss School Class of 2010 are compared against the averages achieved by students in the San Diego Unified School District and San Diego County, as the student level data for comparison group students were not available for analysis.¹

When the initial applicant pool to the Class of 2010 was split by the lottery into the Preuss and comparison groups, there was a concern that the “luck of the draw” may have concentrated academically talented students into one group relative to the other. To see if this was the case, a statistical analysis of pre-lottery standardized test performance was conducted and the results of those analyses suggests that this was not a problem; the pre-lottery test scores were very similar across Preuss and Comparison group students. This means that differences between the groups emerging over time are mostly likely due to subsequent school effects, rather than initial differences in the academic credentials of the two groups. Major group differences on important academic indicators appeared in the following areas:

- There were significant differences between the groups, over time, on standardized tests taken in grades 6-12; all of these differences suggest better performance on the part of Preuss students, with the exception of 6th grade math scores.
- Preuss students completed the courses required for admission to public colleges and universities at a much higher rate than students in the comparison group.
- Preuss students had significantly higher cumulative grade point averages than comparison group students. The more than a quarter grade point difference in the cumulative weighted grade point average was large enough to impact college eligibility and the competitive standing of college applications.
- 74% of Preuss graduates filed a “Statement of Intent to Register” with the University of California, the California State University, or private four-year institutions. Of the remaining 26%, all had plans to continue their education at a community college and entered into a guaranteed transfer agreement, allowing for eventual transfer to either the UC or CSU systems.

¹ Publicly available data was the primary source of information on comparison group performance. While useful, these resources are not exhaustive and information on all desired performance indicators was not available. Because of this, there are unavoidable gaps in our ability to examine the relative performance of the Preuss and the comparison group. Specifically, information on college entrance examinations and college acceptance is not collected by SDUSD, so we are unable directly measure the performance of the two groups.

Section 1: School Characteristics and Issues in the Analysis

The Preuss School is a grade 6-12 charter school located on the campus of the University of California, San Diego. It was founded to expand educational opportunity for students from low-income households. The School offers all students a rigorous academic curriculum supported by a differentiated system of academic and social supports, including a longer school day, a longer school year, intensive tutoring, mentoring, counseling, and parent education opportunities.

Tables 1.1 through 1.3 show 2009/2010 enrollment by grade level, the Race/Ethnicity of students, and the average class size in selected subject areas. Teachers at the Preuss School have a similar average class size relative to the San Diego Unified School district. Of the 43 teachers at the school, three were not fully credentialed.

Table 1.1 Enrollment by Grade – 2009/2010 Academic Year

<i>Grade</i>	<i>Enrollment</i>
Grade 6	174
Grade 7	115
Grade 8	115
Grade 9	110
Grade 10	101
Grade 11	101
Grade 12	100*
Total	816

Source: California Department of Education, Educational Demographics Office (CBEDS) (<http://data1.cde.ca.gov/dataquest/>) * A note on the number of students in tables in this report. 100 Students were enrolled in grade 12 at Preuss in 2010. Of these students, 83 enrolled in Preuss in 6th grade via the lottery. This group of 83 students initial students can be compared to students who applied, but were not accepted, to Preuss in the 6th grade lottery, to examine the impact of a Preuss education on various academic indicators.

Table 1.2 Enrollment Race/Ethnicity 2009/2010 Academic Year

	<i>SCHOOL</i>		<i>DISTRICT</i>
	<i>Enrollment</i>	<i>Percent of Total</i>	<i>Percent of Total</i>
American Indian	0	0%	0.4%
Asian	140	17.2%	4.5%
Pacific Islander	1	0.1%	0.8%
Filipino	13	1.6%	6.0%
Hispanic	535	65.6%	45.9%
African American	78	9.6%	11.7%
White	30	3.7%	23.6%
Multiple/No Response	19	2.3%	3.2%
Total	816	100.0%	100.0%

Source: California Department of Education, Educational Demographics Office (<http://data1.cde.ca.gov/dataquest/>)

Table 1.3 Average Class Size 2009/2010 Academic Year

	<i>School</i>		<i>District</i>
	<i>Number of Classes</i>	<i>Average Class Size</i>	<i>Average Class Size</i>
Schoolwide	195	25.8	27.2
English	32	25.7	23.3
Math	35	22.0	24.8
Social Science	16	28.1	26.6
Science	39	27.0	27.4
Source: California Department of Education, Educational Demographics Office Note: 2009-2010 data not yet available			

The Preuss School admits only students who qualify for federal meal assistance at the time of application and whose parents or guardians have not graduated from a four-year college. In addition, the School seeks students who show academic promise but who may not have lived up to their full potential. Admission to the school follows a two-step process: 1) screening and 2) selection by lottery. In the screening step, several readers score each completed application and identify students/families meeting the demographic criteria and demonstrating academic potential². If space is available, all students are admitted to the school. If the number of screened applicants exceeds the spaces available, a lottery is held and the results of that random drawing determine which students receive an offer of admission to the school. Students who are unsuccessful in the lottery are placed on a waitlist and these students are admitted to the School if and when space becomes available. Members of the Preuss Board have told us that the number of applicants to the school has increased to the point that a lottery will be held each year for admission to 6th grade, into the foreseeable future.

Because the lottery splits the applicant pool into two demographically matched groups, accepted and wait-listed students, it allows us to follow the progress of students over time in a quasi-experimental fashion and determine if (and how) the groups differ on several academic indicators.³ Here we report and compare the performance of the Preuss and comparison groups statistically, across four sets of academic indicators: standardized tests, unweighted and weighted GPA, progress toward (or completion) of A-G admission requirements and the California High School Exit Exam.

Possible Issues in the Analysis:

Before we could have confidence that the results we report were based on a fair and transparent treatment of the data, several issues needed to be addressed. We examined the data extensively and three issues were of particular concern because they could work against an isolation of school effect, or require the application of different statistical methods. The three areas of concern were:

1. Pre-Lottery Standardized Test Performance. Did the Preuss and Comparison students start out at similar levels? This is important because “luck of the draw” in a single lottery drawing could result in an uneven distribution of academic talent in the resulting groups.

² It is our understanding, from discussions with personnel at the Preuss School, that the criteria used to determine “academic potential” were not restrictive. Applicants were not required to demonstrate high academic achievement, only potential, as evidenced by letters of support from teachers or personal statements that indicated academic potential.

³ We are grateful to the San Diego Unified School District, which has generously granted access to academic data for the students in the comparison group, allowing us to perform the analyses presented. Only students in the comparison group who attended one of the San Diego City Schools are included in this report.

2. Attrition. Was there a difference in the number of students leaving the Preuss or comparison group, over time, and were the students who left the groups substantially different from those who started with the group? We wanted to know if attrition, rather than learning and school characteristics, could be influencing our analyses.
3. Access to student records. If we are unable to gain access to the academic records of some students, at what point does this work against a fair assessment of the academic achievement of the two groups?

1) Pre-lottery standardized test performance:

Any time that a single lottery is used to separate a pool of students into two groups it can result in an unequal distribution of attributes, for example, more girls in one group than the other. Because of the Preuss entrance requirements, all students/parents entered into the lottery meet specific income and education criteria, and it is likely that all applicants have a similar motivation to achieve academically. For these reasons, the lottery would have no effect on the distribution of these important demographic characteristics; each group received students with matching demographic and motivational characteristics. However, a lottery does not guarantee that Preuss and comparison groups would receive students with equal academic prowess. Simple “luck of the draw,” might have resulted in more students with high (or low) achievement concentrated in either the Preuss or comparison group. Because of this concern, we examined the “pre-lottery” academic performance of the students in the two groups to determine if differences existed and if those differences were statistically and practically important.

We chose to use standardized test scores as the measure to determine if the two groups started out with similar academic characteristics. The choice was not made because of the innate superiority of standardized test scores as a measure, but for the simple reason that there was no other set of objective measures consistently available across school sites. We deliberately chose not to use academic marks (i.e., GPA) as a baseline indicator because standards (and marks) vary from school to school for reasons other than academic performance; this is especially true in elementary school grades K-6, where a narrative or other type of progress indicator is often used instead of grades and a calculated GPA. When the pre-lottery standardized test performance for Preuss and comparison groups is statistically indistinguishable (by convention, an observed p -value greater than 0.05), it is important to remember that being able to say that there was “no statistically significant difference” is not the same as saying that we are positive that no academic differences existed between the groups. Also, had other measures of academic achievement been available, those measures might have demonstrated group differences. The best claim that can be made is that available evidence did not support a claim of academic difference between the groups, for the measures used.

To determine if the pre-lottery performance of the Preuss and Comparison groups within a graduating class was different, we compared scaled scores from tests administered in the spring of the application year.⁴ Table 1.4 shows the group performance on the standardized tests (significant

4 Scaled scores are raw test scores that have been adjusted to account for content differences in versions of a standardized test. They allow for an “apples to apples” comparison of test performance. “Raw scores identify the number of items answered correctly on a test or sub-test. Raw scores are limited in their measurement precision because of differences among test items. For example, some items are more difficult than others. A scaled score takes item differences into account and is calculated to provide a more precise measure of the knowledge or skills tested. Through this calculation, an increase of one point at one place on the scale is described as being equal to a one- point increase anywhere else on the scale. Scaled scores are particularly useful for reporting changes over time” (California Department of Education).

observed *p*-values are noted with an asterisk) for the Class of 2010. On average, Preuss students scored higher than Comparison group students on two subject tests (Language and Reading), but this difference is not significant. In practical terms these results tell us that, based on these measures, there is no evidence suggesting a statistically significant initial difference in the distribution of academic talent in the Preuss and Comparison groups. It is important to note that both Preuss and comparison group students scored considerably higher than the district average scale score for economically disadvantaged students in all four subject areas of the 5th grade CAT6.

Table 1.4 Class of 2010 - Pre-Lottery Standardized Test Results

TEST SUBJECT AREA (YEAR TAKEN)	PREUSS AVG SCALE SCORE	COMP. AVG SCALE SCORE	DIFF- ERENCE	P-VALUE	DISTRICT AVG SCALE SCORE*
CAT6 Language Arts 5 th (2003)	676 (N=77)	674 (N=92)	2	0.730	634
CAT6 Mathematics 5 th (2003)	671 (N=77)	675 (N=91)	-4	0.500	628
CAT6 Reading 5 th (2003)	673 (N=77)	668 (N=92)	5	0.150	632
CAT6 Spelling 5 th (2003)	659 (N=77)	663 (N=91)	-4	0.449	631
*For economically disadvantaged students					
Source: SDUSD data; California Department of Education (http://star.cde.ca.gov/star2003/viewreport.asp)					

2) *Effect of attrition:*

Our second concern was that the Preuss and comparison groups might have experienced different rates of student loss over time and that, even if both groups lost the same percentage of students, the students who left one group may have been qualitatively different from the students that left the other group. For example, if the Preuss group lost only high-performing students while the comparison group lost a representative group of students, an unequal and unfair comparison would be created between the two groups. A Preuss loss of only high-performing students may have resulted in lower average academic performance scores for Preuss, relative to what they would have been without such attrition. The comparison group would not have experienced this, thus the unfair comparison. Concentration of high or low performing students in a group due solely to attrition would affect the average performance of a group for reasons unconnected to student knowledge or school effects.

To test for this we computed the average pre-lottery test score of all the initial members of the Preuss group and then computed the average pre-lottery test score for all students who remained in the group at the end of the 2009/2010 academic year (Final Group). The process was repeated on the comparison group. Table 1.5 shows the results of those calculations. To determine the net effect of attrition, the final column was calculated: (Preuss Final Members - Preuss Initial Members) - (Comparison Final Members - Comparison Initial members). A positive number (expressed in scale score points) means that attrition tended to raise the test scores of the final Preuss group relative to the comparison group, while a negative number means the opposite, that attrition tended to raise the test scores of the final comparison group relative to the Preuss group.

For the Class of 2010 the effect of attrition was moderate and in favor of the Preuss group. Preuss students who left the school tended to have slightly lower test scores than those who remained, while Comparison group students who left the district tended to have slightly higher test scores in Language Arts and Mathematics than those who remained. Therefore, attrition could be responsible for some small part of the test score differences between Preuss and Comparison group students.

Table 1.5 Class of 2010 Pre-Lottery Test Scores: Effect of Attrition

TEST SUBJECT AREA (YEAR TAKEN)	PREUSS (FINAL)	PREUSS (INITIAL)	COMP. (FINAL)	COMP. (INITIAL)	EFFECT
CAT6 Language Arts 5 th (2003)	676 (N=77)	672 (N=124)	674 (N=92)	676 (N=119)	6
CAT6 Mathematics 5 th (2003)	671 (N=77)	668 (N=124)	675 (N=91)	680 (N=118)	8
SAT9 Reading 5 th (2002)	673 (N=77)	670 (N=124)	668 (N=92)	668 (N=119)	3
CAT6 Spelling 5 th (2003)	659 (N=77)	658 (N=124)	663 (N=91)	663 (N=118)	1

3) Effect of data availability:

Data availability is always a concern. We currently have access to student level data from the San Diego Unified School District (SDUSD) and while this access is invaluable, we are concerned that future applicant pools may draw an increasing number of students from outside SDUSD, and that this increase may impact our ability to track students in the comparison groups.

As more students from outside SDUSD apply to Preuss, it naturally follows that these students will have greater representation in the post-lottery comparison groups. Future lotteries will be held for entry into the 6th grade; so it is likely that unsuccessful lottery participants from schools outside SDUSD will elect to complete elementary school (grades K-6) at their current school, rather than emigrate to a SDUSD elementary school. This could result in an immediate “loss” of comparison group student level data as it is unlikely that we will have immediate access to data from those school districts. For the class of 2010, 10 out of the 123 students waitlisted during the lottery were out of district or private school students. Thus, roughly 8% of the comparison group was immediately lost to attrition.

A second issue has to do with students in the comparison group leaving SDUSD schools. Students not returning to their school in the following term (or academic year) are not required to report the transfer to their current school or provide information on the new school they plan to attend. This is problematic because we will not be able to determine where (or if) students are continuing their education. Even if this knowledge were consistently reported and readily available, it is a strong assumption that we will be able to negotiate multiple data sharing agreements allowing the release of student level data required for analyses. Complicating this issue further are the subset of students who drop out of high school, do not take tests and are not tracked by any school district; these students are lost for analysis purposes.

We have worked with the Preuss School to address this potentially serious problem by modifying the application to the school, so that parental consent is obtained for the release of contact information (home and cell phone, home address) as well as access to current and future academic records. While we will attempt to negotiate data sharing agreements with additional school districts as the need arises, from a practical standpoint this is both expensive and labor intensive and many districts lack the resources to respond to such requests. Even if the negotiation and procurement of data sharing agreements were not extremely labor intensive, data availability will remain a potentially serious problem until such time as the State of California initiates uniform identifiers for students and state-wide data collection and makes that data available for research purposes.

Section 2: Issues Surrounding Standardized Test Performance

In this section and the section that follows, we examine the standardized tests taken by the Class of 2010 from 6th grade through graduation. Over the past decade, the State of California has changed the standardized test used to assess student performance and, because of these changes, the results of two different tests are reported: the California Achievement Test, Version 6 (CAT-6) and the California Standards Test (CST).

The CAT-6 tested students using several examinations and each year students took examinations that were grade and subject specific (e.g., 9th grade English). The examinations were “vertically integrated”, that is, constructed so that test results within a subject area could be directly compared from one year to the next. For example, knowledge demonstrated on the Language Arts CAT-6 could be statistically assessed by comparing the year over year scaled scores earned by students on that examination. The CAT-6 examinations were replaced by the CST in the 2002-2003 school year. While some CST subject tests are tied to specific grade levels and taken by all students (e.g., English and History), Mathematics and Science examinations are linked only to the courses taken by students and are independent of grade level. For example, there is no longer a 9th grade Mathematics examination; students taking Algebra I in the 8th or 9th grades would both take the same CST Algebra I examination. The CST is not vertically integrated and because of this the scores from one year cannot be directly compared to test results from other years

For the purposes of this report, there were two unintended consequences associated with the CST, smaller groups available for statistical analysis and differences in the courses (and tests) taken by students in the two groups. Table 2.1 provides information on which CST examinations were taken in each of the testing years. It is clear that the Preuss and comparison groups took the English and History examinations (World History and U.S. History) mostly during the same years, but that there were some differences in the Sciences tests and pronounced differences in the Mathematics tests taken by the groups. In 2007, 93% of Preuss students took the Geometry examination while only 63% of the comparison group took that exam.

A pattern of proportionately more Preuss students taking higher level Mathematics courses persists across testing years and subject areas. These differences may have introduced bias into the results reported, specifically, a bias favoring the comparison group. Using the 2007 Algebra 1 examination as an example, observe that 93% of Preuss students took the higher level Geometry exam in 2007. A reasonable interpretation is that the higher achieving Preuss students took Geometry, while Preuss students who took Algebra 1 were mainly lower achieving and unprepared to take Geometry. Meanwhile, only 63% of comparison group students took Geometry in 2007 – comparison group students took either Algebra 1 or general 8th grade math. As a result, the reported exam results compare, more or less, the bottom 6% of Preuss students with the bottom third of comparison group students. This would tend to favor the comparison group students purely because of selection effects.

The second issue was small group size. When the number of students taking a CST examination did not exceed 8-10, it is likely that any kind of statistical test would lack “power” – the ability to detect group differences, if they existed. Below this numeric threshold, the results of a statistical test are not reported as there was not a reasonable expectation that the tests performed were capable of detecting “true” group differences. Testing had problems with small sample sizes in a variety of subject areas.

Table 2.1 - Class of 2010 CST Test-Taking Patterns Since 2006

<i>TEST</i>	<i>2006 GRADE 8</i>		<i>2007 GRADE 9</i>		<i>2008 GRADE 10</i>		<i>2009 GRADE 11</i>	
	<i>Preuss</i>	<i>Comp.</i>	<i>Preuss</i>	<i>Comp.</i>	<i>Preuss</i>	<i>Comp.</i>	<i>Preuss</i>	<i>Comp.</i>
English	100.0	100.0	100.0	97.8	97.6	97.8	98.8	97.8
8 th Grade History	100.0	100.0						
World History				16.3	97.6	79.3	1.2	3.3
U.S. History							98.8	94.6
General Math		5.4		2.2				
Algebra 1	98.8	90.2	6.0	28.3		2.2		
Geometry	1.2	4.3	92.8	63.0	21.7	32.6	1.2	6.5
Algebra 2			1.2	4.3	74.7	56.5	32.5	29.3
H.S. Math 9-11					1.2	6.5	66.3	53.3
Int Math 1						1.1		5.4
Int Math 2								
Int Math 3								
Physics			100.0	71.7	8.4	2.2		4.3
Chemistry				2.2	89.2	40.2	2.4	34.8
Biology				8.7		48.9	97.6	38.0
Science 10					97.6	94.6	1.2	1.1

N=83 students total (Preuss); 92 students total (Comparison).

Section 3: Standardized Test Results by Subject Area

This section provides information on all standardized tests taken by the graduating Class of 2010, where sufficient numbers permit.⁵ Tables 3.1–3.6 show the specific test taken, the year the test was taken, the average scaled score earned by both the Preuss and comparison groups (including the number of students in each group), and the p-value associated with the statistical test performed. Observed p-values less than or equal to 0.05 are individually statistically significant at conventional levels. As described in the preceding section, many of the CST tests results could not be analyzed because of small sample sizes.

The difference between the average Preuss and Comparison group scale scores is statistically significant on several examinations. The Preuss students are the higher performing group in the three social sciences and two English exams that reached statistical significance. The results for the three significant mathematics exams are mixed, with Preuss students scoring higher on Algebra 2, and comparison group students scoring higher on the two 6th grade math exams.

Table 3.1 - Class of 2010 Standardized Test Performance, Social Sciences

<i>TEST</i>	<i>PREUSS SCALE SCORE</i>	<i>COMP. SCALE SCORE</i>	<i>P-VALUE</i>
CST 8 th Grade History (2006)	382 (N=83)	350 (N=92)	<.0001*
CST World History (2007)	---	339 (N=15)	---
CST World History (2008)	357 (N=81)	342 (N=73)	0.080*
CST U.S. History (2009)	387 (N=82)	361 (N=87)	0.011*

⁵ For privacy reasons, results are only reported for tests taken by at least ten students in a given year.

Table 3.2- Class of 2010 Standardized Test Performance, English Language Arts

TEST	PREUSS SCALE SCORE	COMP. SCALE SCORE	P-VALUE
CAT6 Language Arts 6 th (2004)	677 (N=83)	674 (N=92)	0.465
CAT6 Language Arts 7 th (2005)	682 (N=83)	682 (N=92)	0.945
CST English Language Arts 6 th (2004)	362 (N=83)	363 (N=92)	0.968
CST English Language Arts 7 th (2005)	372 (N=80)	369 (N=90)	0.620
CST English Language Arts 8 th (2006)	375 (N=83)	370 (N=92)	0.365
CST English Language Arts 9 th (2007)	397 (N=83)	381 (N=90)	0.008*
CST English Language Arts 10 th (2008)	379 (N=81)	373 (N=90)	0.365
CST English Language Arts 11 th (2009)	381 (N=82)	368 (N=90)	0.073*

Table 3.3 - Class of 2010 Standardized Test Performance, Reading

TEST	PREUSS SCALE SCORE	COMP. SCALE SCORE	P-VALUE
CAT6 Reading 6 th (2004)	675 (N=83)	675 (N=92)	0.992
CAT6 Reading 7 th (2005)	689 (N=83)	688 (N=92)	0.805

Table 3.4 - Class of 2010 Standardized Test Performance, Spelling

TEST	PREUSS SCALE SCORE	COMP. SCALE SCORE	P-VALUE
CAT6 Spelling 6 th (2004)	679 (N=83)	676 (N=92)	0.444
CAT6 Spelling 7 th (2004)	687 (N=83)	690 (N=92)	0.581

Table 3.5 - Class of 2010 Standardized Test Performance, Mathematics

TEST	PREUSS SCALE SCORE	COMP. SCALE SCORE	P-VALUE
CAT6 Mathematics 6 th (2004)	684 (N=83)	701 (N=92)	0.002*
CAT6 Mathematics 7 th (2005)	696 (N=83)	698 (N=92)	0.658
CST Mathematics 6 th (2004)	345 (N=83)	370 (N=92)	0.0003*
CST Mathematics 7 th (2005)	367 (N=83)	376 (N=92)	0.195
CST Algebra 1 (2006)	357 (N=82)	371 (N=83)	0.162
CST Geometry (2006)	---	435 (N=4)	---
CST General Mathematics (2006)	---	292 (N=5)	---
CST Algebra 1 (2007)	330 (N=5)	325 (N=26)	0.814
CST Algebra 2 (2007)	---	353 (N=4)	0.211
CST Geometry (2007)	329 (N=77)	334 (N=58)	0.617
CST Algebra 2 (2008)	353 (N=62)	318 (N=52)	0.004*
CST Geometry (2008)	299 (N=18)	286 (N=30)	0.315
CST H.S. Math (2008)	---	336 (N=6)	0.811
CST Algebra 2 (2009)	287 (N=27)	279 (N=27)	0.386
CST Geometry (2009)	---	286 (N=6)	0.737
CST H.S. Math (2009)	344 (N=55)	332 (N=49)	0.363

Table 3.6 - Class of 2010 Standardized Test Performance, Natural Sciences

TEST	PREUSS SCALE SCORE	COMP. SCALE SCORE	P-VALUE
CST Physics (2007)	322 (N=83)	321 (N=66)	0.955
CST Biological Sciences (2007)	---	384 (N=8)	---
CST Physics (2008)	337 (N=7)	---	0.557
CST Chemistry (2008)	334 (N=74)	328 (N=37)	0.404
CST Science 10 (2008)	345 (N=81)	352 (N=87)	0.327
CST Biological Sciences (2008)	---	349 (N=45)	---
CST Physics (2009)	---	316 (N=4)	---
CST Chemistry (2009)	---	319 (N=32)	---
CST Biological Sciences (2009)	367 (N=81)	373 (N=35)	0.470

Section 4: Grade Point Averages and AP Classes

Table 4.1 provides information on the average cumulative weighted and unweighted high school GPA for the Preuss Graduating Class of 2010 and comparison group students. A student's unweighted GPA represents the grades earned for courses taken, without adjustment for course difficulty. A student's weighted GPA takes into account the additional grade point earned for each advanced placement (AP), International Baccalaureate (IB), and honors course taken and passed during high school. Preuss students had higher average unweighted and weighted GPAs relative to control group students, and this difference is statistically significant. The magnitude of the difference is of practical significance, a fifth of a grade point for the unweighted GPA and more than a quarter of a grade point (0.28) for the weighted GPA – large enough to impact both college eligibility and choice of college.

Table 4.1 Class of 2010 Cumulative GPA

ACADEMIC YEAR	PREUSS	COMP.	P-VALUE
Unweighted GPA	3.19	2.99	0.013*
Weighted GPA	3.41	3.13	0.002*

N=82 students (Preuss); 82 students (Comparison).

Comparing these results to the unweighted GPA's, it is clear that Preuss students took more AP and honors courses than the comparison group students. The difference in AP course taking was dramatic; Preuss students took, on average, 7.4 years of AP courses and the comparison groups took 4.1 years. This very large difference in AP courses translated into substantial differences observed in the cumulative weighted GPA. The grade point difference had important practical implications for Preuss students in terms of college eligibility and the choice of which college to attend.

Table 4.2 shows the AP class-taking patterns of the Class of 2010. The first column shows the average number of AP tests attempted in a given school year per student. The second column shows the percentage of those AP classes passed with a grade "C" or higher. After taking course repeats into account, Preuss students attempted an average of 7.4 AP classes throughout their high school years and scored an average of 2.1 on these exams. On 10% of these exams, students earned a score of 4 or 5 and, depending on the college, could receive college credit for some or all of these courses.

Table 4.2 Preuss Class of 2010 AP Scores by Academic Year⁶

ACADEMIC YEAR	AP CLASSES ATTEMPTED	AVG SCORE ON AP EXAM	% EARNED 3 OR HIGHER	% EARNED 4 OR HIGHER
2006-07 (9 th Grade)	0.54	3.67	86.7	55.5
2007-08 (10 th Grade)	1.59	1.70	25.8	4.5
2008-09 (11 th Grade)	2.10	2.12	26.4	9.8
2009-10 (12 th Grade)	3.14	1.98	26.8	5.7
Cumulative	7.37	2.08	30.8	10.3

Table 4.3 Class of 2010 AP Classes Attempted by Academic Year

ACADEMIC YEAR	PREUSS	COMP
2006-07 (9 th Grade)	0.54	0.05
2007-08 (10 th Grade)	1.59	0.65
2008-09 (11 th Grade)	2.10	1.60
2009-10 (12 th Grade)	3.14	1.83
Cumulative	7.37	4.13

Section 5: A-G Completion Rates

The University of California and the California State University have jointly determined both the subject areas and number of courses a student must take and pass (with a grade of “C” or better) to be eligible for admission to public four-year institutions in California. Collectively, these requirements are referred to as the “A-G requirements.” Table 5.1 shows each of the subject areas and the minimum and recommended number of years of study required for college eligibility:

Table 5.1 A-G Requirements for CSU and UC Admission

REQUIREMENT	SUBJECT AREA	YEARS OF STUDY REQUIRED
“A”	History / Social Science	2
“B”	English	4
“C”	Mathematics	3 required (4 recommended)
“D”	Laboratory Science	2 required (3 recommended)
“E”	Language other than English	2 required (3 recommended)
“F”	Visual and Performing Arts	1
“G”	Electives	1
All Requirements	Total Years: 15 required, 18 recommended	

For the Class of 2010 we analyzed the courses students had taken using unofficial transcripts from the Preuss School and administrative datasets supplied by SDUSD. Table 5.2 shows the percentage of students in each group completing the A-G requirements. Although many comparison group students in past years came close to completing the required years of study in several subject areas, the “all or none” nature of the A-G requirements drove down the percentage of students graduating with successful completion in that group.

Of the 82 Preuss students, 96% completed all A-G requirements successfully. Of the three students not completing A-G, all fell short due to the mathematics requirement (the “C” requirement) but each

⁶ The CDE also reports AP test-taking patterns across schools, but it does not provide results by grade level. As a result, it is impossible to track the performance of the Class of 2010 across years in this dimension. Individual-level test results are not available at this time.

student fell “just short” having successfully met more than two years of the requirement, but failing to complete three full years of study. Of the 92 Comparison group students, only 45% completed all A-G requirements successfully. The students who fell short of meeting the requirements often fell short by a substantial degree. For example, the 24 students who fell short of the math requirement met an average of 1.1 years of the requirement, far below the necessary three years.

Table 5.2 Class of 2010 A-G Completion Rates by Requirement

A-G REQUIREMENT	PREUSS % COMPLETE	COMP. % COMPLETE
A – History & Social Sciences	100%	68%
B – English Language Arts	100%	54%
C – Mathematics	96.3%	74%
D – Natural Sciences	100%	68%
E – Lang. other than English	100%	75%
F – Visual and Performing Arts	100%	84%
G – Elective	100%	80%
All Requirements	96.3%	45%

N=82 students (Preuss); 92 students (Comparison).

Section 6: High School Exit Exam

The State of California, as a condition of graduation, requires that every student take and pass the California High School Exit Exam (CAHSEE). By the end of the tenth grade, each student is expected to make their first attempt to take and pass the two sections of the CAHSEE: Mathematics and English. These sections may be taken and passed individually, with retakes allowed until the student passes. All students in both the Preuss and comparison groups had taken and passed both portions of the examination by the end of 10th grade (83 Preuss, 92 comparison). Table 6.1 is presented for comparison purposes and reports on the 10th grade attempt and pass rate for all test takers in California and the County of San Diego.

Table 6.1 San Diego County & California 10th Grade CAHSEE Performance

Location	Tested or Passing	Subject	All Students	English Learner (EL) Students	Economically Disadvantaged	Not Economically Disadvantaged
COUNTY	# Tested	Math	37,674	5,654	17,276	18,657
	Passing	Math	32,733 (87%)	3,482 (62%)	13,780 (80%)	17,499 (94%)
	# Tested	ELA	38,056	5,785	17,504	18,794
	Passing	ELA	32,355 (85%)	2,655 (46%)	13,267 (76%)	17,628 (94%)
STATE	# Tested	Math	473,439	67,206	249,009	188,417
	Passing	Math	391,523 (83%)	37,531 (56%)	189,992 (76%)	171,737 (91%)
	# Tested	ELA	475,842	68,082	250,277	189,333
	Passing	ELA	391,975 (82%)	30,097 (44%)	187,739 (75%)	174,055 (92%)

Section 7: College Entrance Examinations and College Enrollment

Table 7.1 provides the average scores earned, by decile, for the 2010 Preuss graduates compared against the SDUSD, San Diego County, and California statewide averages on the examinations.⁷ Two points are worth noting. The first is that the “percent tested” reported by the CDE is computed by

⁷ Obtained from the California Department of Education website (<http://data1.cde.ca.gov/dataquest/>).

dividing the total number of test scores recorded, by the 12th grade enrollment. This tends to inflate the percent of students reported as taking the test because the calculation includes all attempts and does not adjust for students making multiple attempts at the examination. The second point is that the information reported by the CDE does not isolate the “best score” achieved by each student. Because of this, we are unable to estimate whether multiple attempts at the examinations tend to inflate or deflate the differences in average scores reported by the CDE. If, on average, the higher scoring students made multiple attempts and those scores were as high as or higher than their initial attempt, then the net effect would be inflationary. The reverse would be true if predominantly lower scoring students made multiple attempts and did not improve on their initial performance in subsequent attempts.

Because all Preuss students were required to take the SAT I and II, it is not reasonable to compare their average score with that attained by schools where students were allowed to “self-select” whether to take the test or not. The exact percentage varies from school to school, but in general, fewer than 50% of students take these tests. Those students are likely college bound and in the upper half of their graduating classes in terms of GPA and courses taken. By presenting the average scores of Preuss students by deciles, readers are free to make their own judgment about what proportion of Preuss test takers represent an “apples to apples” comparison to the district.

The individual-level Preuss data report the average maximum score per student based on data provided by Preuss, by deciles. For instance, the top 50% of Preuss students had an average SAT-1 composite score of 1714, while the top 90% of Preuss students had an average SAT-I composite score of 1595. In the lower portion of the table, average scores are reported from the CDE website. The data in the upper and lower portions of the table come from different sources and are calculated using different methods—namely, the CDE uses the average score from multiple attempts while the individual-level calculations use each student’s highest score. As such, one should exercise caution when comparing the individual-level data reported by Preuss with the average scores reported by the CDE.

Preuss students take the SAT-I at extremely high rates, while fewer than half of all students in the district do so. The scores reported by deciles demonstrate the importance of these different test-taking rates in determining the average performance of different groups of students. If the top half of the students in the district are being tested and compared with the Preuss students, this will bias the comparison in favor of the district to a large degree.

Table 7.1 Preuss Class of 2010 SAT I and II Scores⁸ (Composite Score: Mathematics + English + Writing)

TOP %	100	90	80	70	60	50	40	30	20	10
PREUSS (Individual)	1560	1595	1625	1651	1681	1714	1744	1784	1833	1907
	Testing Rate			Average Score						
PREUSS (CDE)	100.00%			1547						
SDUSD	43.93%			1458						
COUNTY	34.67%			1534						
STATE	33.36%			1512						

For the Class of 2010, the average score of the Preuss test takers was higher than that recorded by students in the district and state.

The scores earned on the SAT’s are indicators of academic achievement rather than the sole determinants of college acceptance. When combined with GPA and completion of the A-G

⁸ Average scores and percent of students taking the SAT 1 for the SDUSD, County, and State were obtained from the CDE website.

requirements, these indicators determine both the eligibility and competitive standing of college the applications made by each graduate. Table 7.2 shows the number and percentage of Preuss graduates in the Class of 2010 submitting a Statement of Intent to Register (SIR) to each segment of higher education as of August 2010, as provided by the Preuss Registrar's Office. The SIR is not a perfect predictor of actual college enrollment, because students can change their mind even after they notify a college of their enrollment plans. However, until we obtain actual enrollment information from colleges, SIR is the best indicator we have available.

This table shows that 73.5% of the graduating class of 2010 intended to enroll in 4-year colleges and universities in the Fall of 2010 and 26% intended to enroll in community colleges. The University of California (as well as CSU) allows for dual admission or Guaranteed Transfer in which students enter the UC as juniors after completing 2 years of approved community college course work. The expectation is that a substantial number of Preuss students attending community colleges will eventually transfer to either the UC or CSU campuses to complete four-year degrees.

Table 7.2 Preuss Class of 2010 SIR by Higher Education Segment

	NUMBER OF STUDENTS	PERCENT OF CLASS
UC	27	27.6%
CSU	15	15.3%
Private	30	30.6%
Total 4-Year College	72	73.5%
Community College	26	26.5%
Total	98	100%

Of note this year is an increase in the number of students intending to enroll in community college, relative to previous years. Anecdotal evidence from school administrators suggests that reduced parental income, rising tuition costs and reduced student loan availability were likely contributors to the observed increase in community college enrollment. The table below presents GPA and SAT data by SIR. Students who expressed an intent to register at community colleges did have substantially lower GPAs and SAT scores than their counterparts planning to attend state, UC and private universities, on the order of 0.4 grade points and 120 SAT points. Although the differences were substantial, the average SATs and GPAs of students planning to attend community colleges were not so low as to preclude admission to less competitive 4-year institutions, suggesting that economic stress and uncertainty did play a role in decisions about post-secondary education.

Table 7.3 GPA and SAT scores by SIR

	Average Weighted GPA	Average SAT Score
Community College	3.00	1446
CSU	3.39	1565
UC	3.67	1611
Private University	3.56	1627