



Research Brief

Relationship of Student Success and Title III HSI STEM Grant Services: 2011-2012 through 2014-2015

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Purpose of Brief

This brief summarizes the program participation and course success rate of students receiving services offered by the Title III HSI STEM Grant at CHC.

Summary of Findings

- **The grant is equitably serving the CHC student population:** In 2014-2015, the proportion of students of all ethnicities who received services offered by the Title III HSI STEM Grant were statistically the same ($p > 0.080$, $d < 0.12$) as the proportion of students who were in the same sections and did not receive services offered by the grant.
- Overall students who received services offered by the grant between 2010-2011 and 2014-2015 were substantially ($d = 0.21$) more likely to successfully complete their course (82%) than students who did not receive services (73%).
- In 2014-2015, students who received services offered by the grant were more likely to successfully complete their course (80%) than students in the same section who did not receive services (73%) although the difference was not substantial ($d = 0.15$).
- Asian students who received services offered by the grant were substantially ($d = 0.30$) more likely to successfully complete their course (88%) than Asian students in the same section who did not receive services ($d = 76\%$).

Overview

The Title III HSI STEM Grant at Crafton Hills College (CHC), in addition to supplemental instruction and learning communities, provides other non-instructional support services to increase student engagement and support student completion, especially for Hispanic and other low-income students. These services include education planning and counseling, extra-curricular activities for STEM Trek and STEM Academy students, and access to undergraduate research opportunities. Students receiving these services are tracked by Grant faculty and staff in an effort to study whether there is a correlation between student success and the services provided by the Title III HSI STEM Grant.

Methodology

To examine the relationship between students receiving services offered by the Title III HSI STEM Grant and academic performance, two comparison groups were created:

1. Students receiving services offered by the Title III HSI STEM Grant as identified in SARS Grid, and
2. Students enrolled in the same course sections in the same term as students in the first comparison group but who did not receive services offered by the Title III HSI STEM Grant.

The groups were compared for statistical differences (p-value and effect size) based on unduplicated headcount and course success. Grade on record (GOR) refers to one of the following grades: A, B, C, D, F, CR/P, NC/NP, I, or W. Success is defined as the number of A, B, C, or CR/P grades divided by the number of grades on record.

The effect size statistic (d) is used to indicate the size of the difference between those who did and did not participate in a learning community. Effect size is calculated by dividing the difference of the two means by the pooled standard deviation. A substantial effect would be .20 or higher. It is important to mention that the number of students in each group does not influence effect size; whereas, when statistical significance is calculated, the number of students in each group does influence the significance level (i.e., " p " value being less than .05).

Findings

Table 1 displays the success rate of students who received services offered by the Title III HSI STEM Grant in comparison to students who were in the same sections but did not receive services. Overall students who received services offered by the grant were substantially ($d = 0.21$) more likely to successfully complete their course (82%) than students who did not receive services (73%).

Table 1. Course success rates by comparison group and academic year.

Academic Year	Student Group	Successful		p	d
		#	%		
2011-2012	Non-STEM Serviced Student	8,892	73.8	< 0.001	0.25
	STEM-Serviced Student	407	84.8		
2012-2013	Non-STEM Serviced Student	11,710	72.6	< 0.001	0.32
	STEM-Serviced Student	786	86.9		
2013-2014	Non-STEM Serviced Student	15,407	72.6	< 0.001	0.20
	STEM-Serviced Student	1,355	81.6		
2014-2015	Non-STEM Serviced Student	15,915	73.0	< 0.001	0.15
	STEM-Serviced Student	1,611	79.6		
Overall	Non-STEM Serviced Student	51,924	72.9	< 0.001	0.21
	STEM-Serviced Student	4,159	82.0		

Note: '#' refers to the number of students who in each ethnicity group, and '%' refers to '#' divided by the total number of persons in the comparison group.

Table 2 indicates the program participation rate and course success rate for each comparison group by ethnicity and academic year. In 2014-2015, the proportion of students of all ethnicities who received services offered by the Title III HSI STEM Grant were statistically the same ($p > 0.080$, $d < 0.12$) as the proportion of students who were in the same sections and did not receive services offered by the grant. Additionally, the proportion of students of all ethnicities who received services from the grant has progressively improved from 2011-2012 to 2014-2015 to be more similar to the proportion of students of all ethnicities who did not receive services offered by the grant. This indicates the grant is equitably serving the CHC student population.

In 2014-2015, Asian students who received services offered by the Title III HSI STEM Grant were substantially ($d = 0.30$) more likely to successfully complete their course (88%) than Asian students in the same section who did not receive services offered by the grant ($d = 76\%$). Students of all ethnicities who received services offered by the grant were more likely to successfully complete their course (80%) than students in the same section who did not receive services offered by the grant (73%) although the difference was not substantial ($d = 0.15$). This is a slight decrease from 2013-2014, where students who received services offered by the grant were substantially ($d = 0.20$) more likely to successfully complete their course (82%) than students in the same section who did not receive services offered by the grant (73%).

Table 2. Program participation and course success rate by comparison group, ethnicity, and academic year.

Academic Year	Ethnicity	Program Participation						Course Success					
		Non-STEM Serviced Student		STEM-Serviced Student		p	d	Non-STEM Serviced Student		STEM-Serviced Student		p	d
		#	%	#	%			#	%	#	%		
2011-2012	Asian	184	6.3	6	7.0	0.797	0.03	551	77.7	41	91.1	0.003	0.33
	African American	207	7.0	3	3.5	0.083	-0.14	595	73.1	8	88.9	0.160	0.36
	Hispanic	1,103	37.5	42	48.8	0.039	0.23	3,326	71.0	178	81.3	< 0.001	0.23
	Native American	65	2.2	3	3.5	0.525	0.09	198	73.9	11	84.6	0.319	0.25
	Caucasian	1,361	46.3	31	36.0	0.053	-0.21	4,165	75.8	166	86.9	< 0.001	0.26
	Other/Unknown	21	0.7	1	1.2	0.702	0.05	57	72.2	3	100.0	< 0.001	0.62
	Total	2,941	100.0	86	100.0			8,892	73.8	407	84.8	< 0.001	0.25
2012-2013	Asian	225	6.0	17	10.1	0.083	0.17	669	74.8	79	89.8	< 0.001	0.35
	African American	242	6.5	11	6.5	0.971	0.00	729	68.9	53	84.1	0.002	0.33
	Hispanic	1,515	40.6	76	45.2	0.234	0.10	4,612	69.1	360	86.3	< 0.001	0.38
	Native American	80	2.1	4	2.4	0.842	0.02	255	73.5	15	88.2	0.080	0.34
	Caucasian	1,662	44.5	59	35.1	0.013	-0.19	5,395	76.2	271	87.4	< 0.001	0.27
	Other/Unknown	12	0.3	1	0.6	0.649	0.05	50	75.8	8	88.9	0.290	0.31
	Total	3,736	100.0	168	100.0			11,710	72.6	786	86.9	< 0.001	0.32
2013-2014	Asian	279	5.7	24	9.4	0.048	0.16	879	75.3	145	82.9	0.015	0.18
	African American	393	8.1	17	6.7	0.384	-0.05	1,132	68.0	95	81.2	< 0.001	0.29
	Hispanic	2,059	42.3	115	45.1	0.380	0.06	6,427	69.7	555	76.2	< 0.001	0.14
	Native American	99	2.0	10	3.9	0.126	0.13	324	74.8	46	92.0	< 0.001	0.41
	Caucasian	2,024	41.6	88	34.5	0.021	-0.14	6,606	76.1	507	87.0	< 0.001	0.26
	Other/Unknown	15	0.3	1	0.4	0.834	0.02	39	68.4	7	87.5	0.177	0.42
	Total	4,869	100.0	255	100.0			15,407	72.6	1,355	81.6	< 0.001	0.20
2014-2015	Asian	292	6.2	28	9.2	0.080	0.12	924	75.8	149	88.2	< 0.001	0.30
	African American	409	8.7	19	6.3	0.086	-0.09	1,162	68.8	108	77.1	0.026	0.18
	Hispanic	2,034	43.5	135	44.4	0.750	0.02	6,900	70.0	685	76.0	< 0.001	0.13
	Native American	98	2.1	9	3.0	0.385	0.06	325	74.9	57	82.6	0.127	0.18
	Caucasian	1,834	39.2	112	36.8	0.411	-0.05	6,567	76.9	607	82.1	< 0.001	0.13
	Other/Unknown	12	0.3	1	0.3	0.830	0.01	37	66.1	5	71.4	0.785	0.11
	Total	4,679	100.0	304	100.0			15,915	73.0	1,611	79.6	< 0.001	0.15