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### Chemistry 10 Strategies to Address Underperforming Students

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Based on the Physical Science Department's program review self-evaluation reports,<sup>1</sup> equity gaps were identified in the successful course completion data: Black and Hispanic students were completing chemistry courses at lower rates than students from other ethnicity/race groups. In response, the department worked in collaboration with the College's Latino Center/Adelante Program and Black Collegians Program to create and administer targeted instructional supports for Hispanic and Black students, specifically those participating in the Latino Center and Black Collegians Program, as well as the Science and Research Initiative. These supports included identifying two sections of Chemistry 10 for students from these programs and offering supplementary weekend workshops to help students as they moved through the curriculum. These weekend "boot camps" are intensive, faculty-led workshops focused on improving the math and chemistry skills necessary to successfully complete the chemistry courses. In total, 40 current and prospective students attended these chemistry boot camps in spring 2015, which were held over five consecutive Saturdays, and the results were dramatic<sup>2</sup>:

- 67.5 % of students enrolled in targeted sections of Chemistry 10 who attended the workshops successfully completed Chemistry 10 as compared to 41.7% of students enrolled in targeted sections of Chemistry 10 who did not attend the supplemental workshops.
- The average grade point average for students from the targeted sections who attended was 2.5 compared to 2.07 for students from the targeted sections who did not attend.
- Students who attended the weekend workshops also successfully completed Chemistry 10 at higher percentage rates than all students enrolled in Chemistry 10; 67.5% of participants successfully completed the course compared to 55.5% of all students.

The impact on students of color was particularly significant, although the sample size was small. The following table provides an overview of the impact of this intervention to mitigate equity. While gaps still exist, these workshops clearly had an impact on the success of Black and Hispanic students.

**CHEM 10 Success Rates and GPA by Ethnicity**

Ethnicity	Enrolled in Targeted Sections and Attended Weekend Workshops	Enrolled in Targeted Sections and Did Not Attend Weekend Workshops	All CHEM 10
Count of Asian/PI Students	3	3	153
Success Rate	100.0%	100.0%	69.3%
GPA	3.33	3.00	2.71

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<sup>1</sup> Evidence: 2013-2014 Physical Sciences Program Review [Physical\\_Science\\_Program\\_Review\\_2014.pdf](#)

<sup>2</sup> Evidence:

[http://www.smc.edu/EnrollmentDevelopment/InstitutionalResearch/Documents/Reports/Other\\_Reports/2015SMCSTEMWorkshopEvaluation.pdf](http://www.smc.edu/EnrollmentDevelopment/InstitutionalResearch/Documents/Reports/Other_Reports/2015SMCSTEMWorkshopEvaluation.pdf) [SMC\\_STEM\\_workshop\\_evaluation\\_2015.pdf](#)

<b>Ethnicity</b>	<b>Enrolled in Targeted Sections and Attended Weekend Workshops</b>	<b>Enrolled in Targeted Sections and Did Not Attend Weekend Workshops</b>	<b>All CHEM 10</b>
Count of African-American/Black Students	8	4	49
Success Rate	62.5%	25.0%	40.8%
GPA	2.50	1.50	2.14
Count of Hispanic/Latino Students	20	9	325
Success Rate	60.0%	11.1%	38.5%
GPA	2.21	1.00	2.04
Count of White Students	7	5	206
Success Rate	85.7%	80.0%	70.9%
GPA	3.00	2.75	2.86
Total*	40	24	795
Success Rate	67.5%	41.7%	55.5%
GPA	2.50	2.07	2.50

Funding for the Spring 2015 pilot program was provided by student equity funds from the U.S. Department of Education Title III HSI-STEM (Hispanic-Serving Institutions - Science, Technology, Engineering, or Mathematics) and Articulation grant focused on decreasing disproportionate impact in the classroom. This grant provided a model framework and was used to market participation in these workshops specifically toward underrepresented students at the College in order to improve access to and success in STEM programs. Based on promising data that Chemistry 10 boot camps decrease the achievement gap for Black and Hispanic students, the College offered these workshops again in Fall 2015 and Winter 2016 and scaled up these efforts in Spring 2016.