

Supplemental Material

CBE—Life Sciences Education

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Example GLM with no interaction terms:

```
glm(Score ~ CLC status +  
Minoritized Status + First Generation Status +  
Transfer Student status + Sex +  
Low income status + GPA)
```

Example GLM with interaction terms:

```
glm(Score ~ CLC status +  
Minoritized Status + First Generation Status +  
Transfer Student status + Sex +  
Low income status + GPA + CLC*GPA)
```

Figure S1: Examples of formulae used for GLMs. Top panel shows an example formula for a GLM with no interaction terms, while the bottom panel shows an example where the effect of an interaction between GPA and participation in a CLC is assessed.

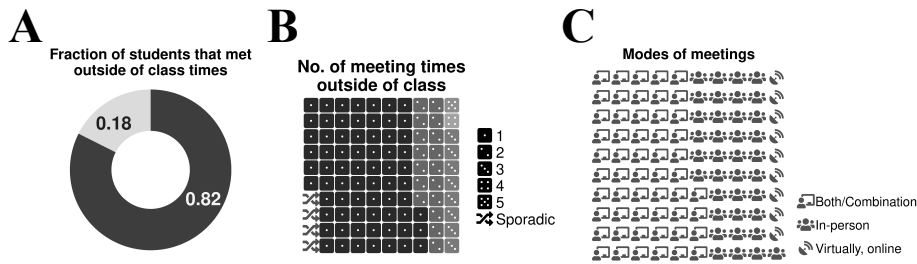


Figure S2: Results of survey data about CLC participation from 2019. (A) Fraction of students who met with their CLCs outside of class times at least once. (B) Number of times that students met with their CLCs per week in some format. (C) Modalities that students used to meet with their CLCs.

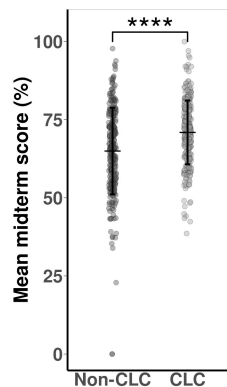


Figure S3: Overall exam performance of CLC versus Non-CLC students in 2019. * = pValue < 0.01. Horizontal line shows the mean, and vertical lines show standard deviation. n=270 for Non-CLC and n=295 for CLC.

Demographic variable	2019		2020	
	Estimate	p-Value	Estimate	p-Value
CLC	4.460	0.000	2.282	0.005
Cummulative GPA	12.367	0.000	11.585	0.000
Minoritized student	-1.297	0.014	-2.983	0.000
Sex: Female	-2.913	0.001	-2.111	0.005
Low Income	-2.145	0.027	-0.288	0.718
First Generation	-0.207	0.827	-1.113	0.201
Transfer student	-1.806	0.144	-0.050	0.962

Table S1: Coefficients for GLM models estimating effects of various demographic variables on student performance. Similar trends are seen in both years, with CLC students performing better than Non-CLC students, even when accounting for demographic differences.

Model for effect of x_1 and x_2 on Y with interaction between x_1 and x_2

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3(x_1*x_2)$$

Effect of 1 unit change in x_1 on Y

$$\beta_1 + \beta_3*x_2$$

Effect of 1 unit change in x_2 on Y

$$\beta_2 + \beta_3*x_1$$

Figure S4: Derivation of equations to estimate effects of variables when considering interactions between the variables. The example model shown estimates the effects of two interacting variables, x_1 and x_2 on the outcome variable, Y. From a GLM, β_1 is the coefficient for x_1 , β_2 is the coefficient for x_2 , and β_3 is the coefficient for the interaction between x_1 and x_2 .

Demographic variable	2019		2020	
	Estimate	p-Value	Estimate	p-Value
CLC	2.619	0.016	0.591	0.572
Cummulative GPA	12.385	0.000	11.332	0.000
Minoritized student	-3.648	0.004	-5.837	0.000
Sex: Female	-2.825	0.002	-1.534	0.045
Low Income	-2.064	0.032	-1.323	0.136
First Generation	-0.298	0.752	-0.330	0.685
Transfer student	-2.015	0.102	-0.388	0.717
Group*Minoritized student	4.376	0.009	3.588	0.034

Table S2: Coefficients for GLM models estimating the interaction effect between CLC and minoritized student status. Similar trends are seen in both years, with minoritized student status interacting significantly with participation in a CLC.

Demographic variable	2019		2020	
	Estimate	p-Value	Estimate	p-Value
CLC	17.607	0.001	14.500	0.016
Cummulative GPA	14.379	0.000	14.240	0.000
Minoritized student	-1.391	0.111	-3.128	0.000
Sex: Female	-3.033	0.001	-1.637	0.032
Low Income	-2.234	0.020	-1.456	0.102
First Generation	-0.150	0.874	-0.276	0.734
Transfer student	-1.826	0.137	-0.362	0.736
Group*CummulativeGPA	-4.286	0.010	-3.922	0.036

Table S3: Coefficients for GLM models estimating the interaction effect between CLC and GPA. Similar trends are seen in both years, with CLC participation reducing the predictive effect of GPA on overall student performance in the class.

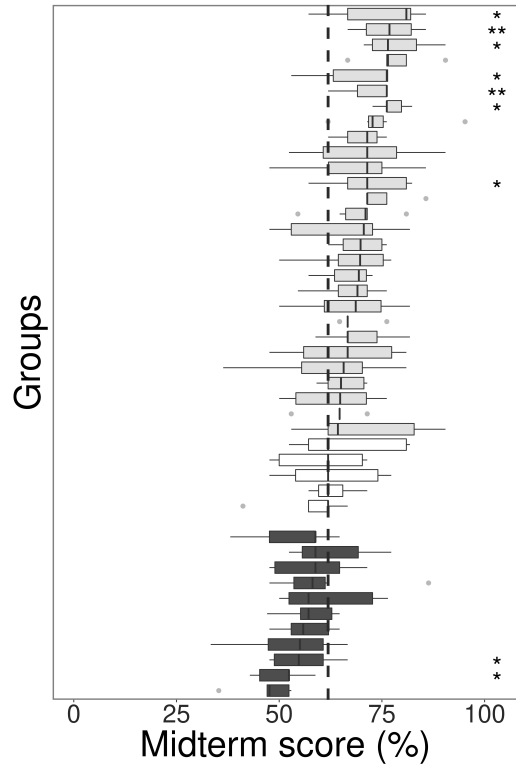


Figure S5: Overall midterm score distribution for individual groups. Overall midterm score distributions of each group are displayed in boxplots. Dashed line shows the median score of Non-CLC students for comparison. Light grey boxes indicate groups that had higher medians than the Non-CLC students, and dark grey boxes are groups that had lower medians than the Non-CLC students. Groups that did significantly better or worse than Non-CLC students are indicated by asterisks. * = p-Value < 0.05, ** = p-Value < 0.01. P-values were derived from a Wilcoxon Rank Sum test comparing each group to the Non-CLC students, and adjusting for multiple comparisons. Data for the section not shown in the main paper is presented here.