

Cañada College Division of Science and Technology

Research Brief

Chemistry 410 Hybrid Course Study

Study

In 2011 the Division of Science and Technology began offering a hybrid version of the CHEM 410 - *Chemistry for Health Sciences* course. In contrast to the non-hybrid version of the course which met twice a week, the hybrid course met once a week in person and completed additional work online. This report compares the retention, success, and performance of the students who enrolled in the hybrid course with the retention, success, and performance of their peers in non hybrid courses.

Sample

The sample included all CHEM 410 enrollments between Fall 2008 and Spring 2013. Sample variables included : term, day or evening course, course retention, course success, course grade, student gender, student ethnicity, hybrid or non hybrid course, learning community or non-learning community course.

Methodology

Data was collected from the San Mateo Community College District Institutional Database and exported into SPSS Statistics Version 21. Descriptive statistics (cross tabulations) were produced to illustrate the differences in outcomes among students participating in the CHEM 410 Hybrid and Non-Hybrid courses. Chi-square tests were administered to determine the statistical significance of the differences among the groups.

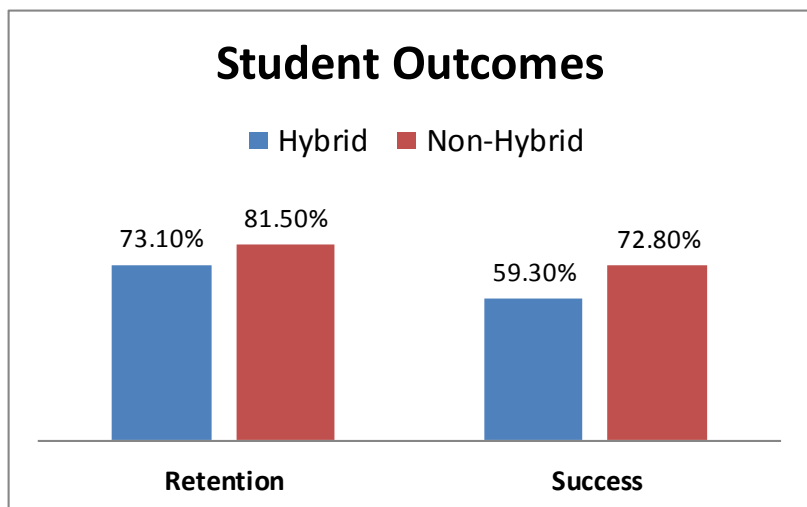
Findings

- Among all students who enrolled in CHEM 410, students who enrolled in hybrid courses had lower retention and success rates than students enrolled in non-hybrid versions of the course.
- Among students enrolled in evening sections of CHEM 410, students participating in the hybrid evening courses had lower rates of retention and success compared to their peers in the non-hybrid evening courses.
- Students enrolled in the learning communities had higher retention and success rates than their peers in other hybrid sections of CHEM 410 but lower retention and success rates than students in the non-hybrid sections of CHEM 410. However the differences were not statistically significant at the .05 critical value.

Student Retention and Success (Students in Hybrid Courses vs. Non-Hybrid Courses)

The students participating in the hybrid courses had lower rates of retention and success compared to their peers in the non-hybrid courses.

The differences were statistically significant at the .05 level.



	<i>n</i>	Retained	% Retained	Success	% Retained
Hybrid	145	106	73.10%	86	59.31%
Non-hybrid	368	300	81.52%	268	72.83%
		Chi Sq.	0.035		0.003

Grade Distribution (Hybrid vs. Non Hybrid)

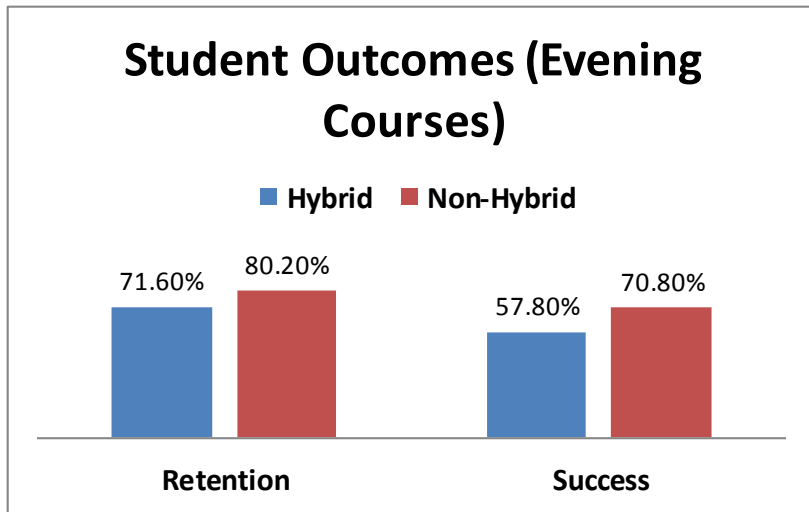
	A	B	C	D	F	IF	W	Total
Hybrid	50 34.5%	21 14.5%	15 10.3%	7 4.8%	11 7.6%	2 1.4%	39 26.9%	145
Regular	137 37.2%	82 22.3%	49 13.3%	10 2.7%	22 6.0%	0 0.0%	68 18.5%	368
Total	187	103	64	17	33	2	107	513

Grade Distribution of Course Completers (Hybrid vs. Non Hybrid, Withdrawals and IF Excluded)

	A	B	C	D	F
Hybrid	50 48.08%	21 20.19%	15 14.42%	7 6.73%	11 10.58%
Regular	137 45.67%	82 27.33%	49 16.33%	10 3.33%	22 7.33%
Total	187	103	64	17	33

Student Retention and Success (Evening Courses)

The students participating in the hybrid evening courses had lower rates of retention and success compared to their peers in the non-hybrid evening courses.



	<i>n</i>	Retained	% Retained	Success	% Success
Hybrid	109	78	71.56%	63	57.80%
Non-hybrid	192	154	80.21%	136	70.83%
		Chi Sq.	0.086		0.022

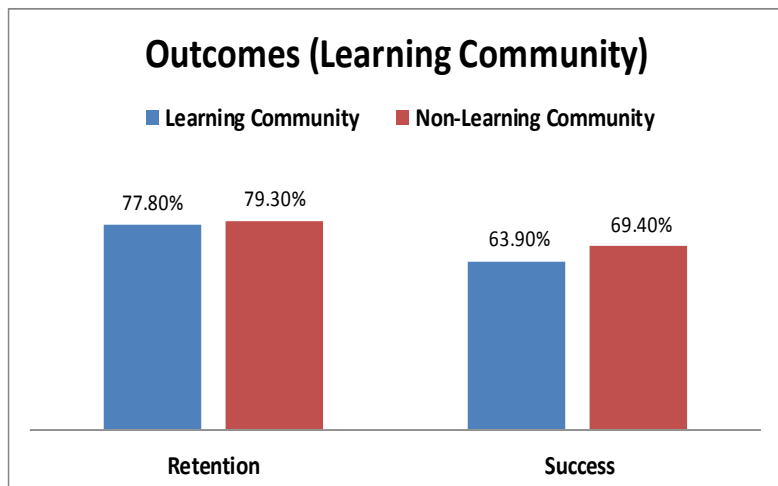
Student Retention and Success (Non-Hybrid Day vs. Non-Hybrid Evening)

The non-hybrid students participating in the evening courses had lower rates of retention and success compared to their non-hybrid peers participating in the daytime courses.

	<i>n</i>	Retained	% Retained	Success	% Success
Non-hybrid Day	176	146	83.30%	132	75.00%
Non-hybrid Eve.	192	154	80.21%	136	70.83%

Learning Community

Students enrolled in the learning communities had higher retention and success rates than their peers in other hybrid sections of CHEM 410 but lower retention and success rates than students in the non-hybrid sections of CHEM 410. However the differences were not statistically significant at the .05 critical value.

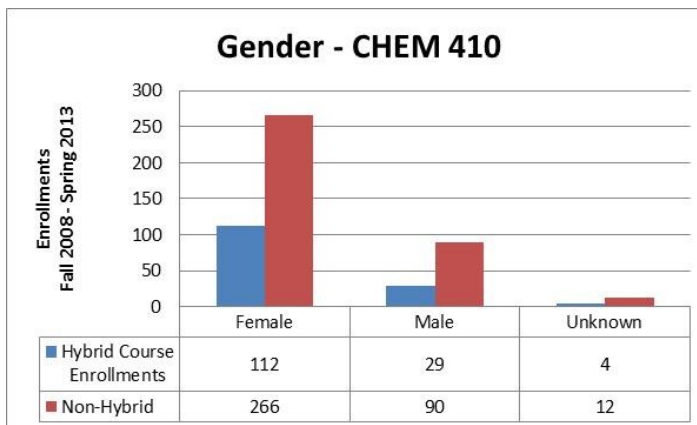
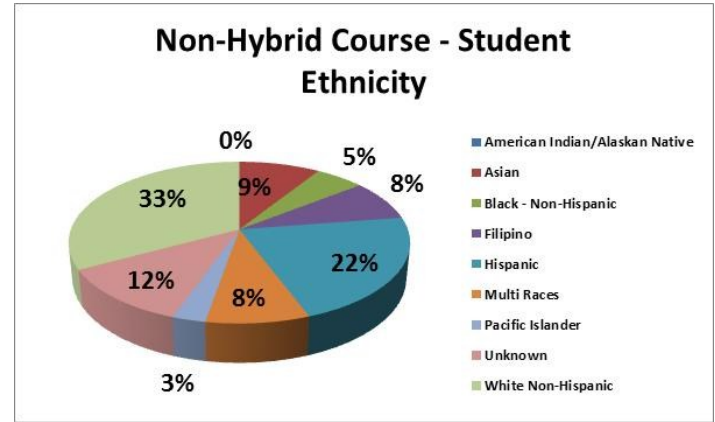
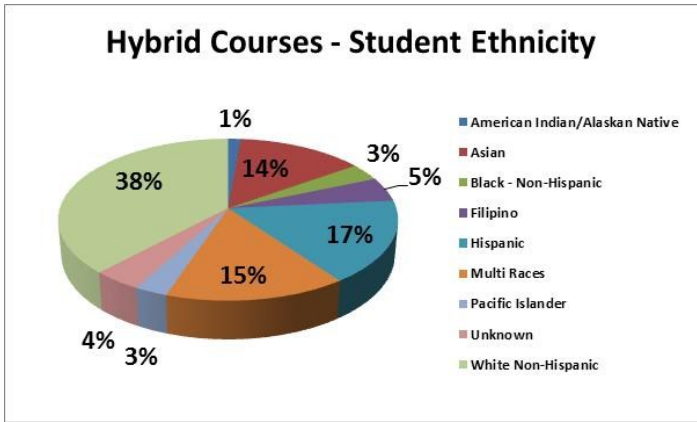
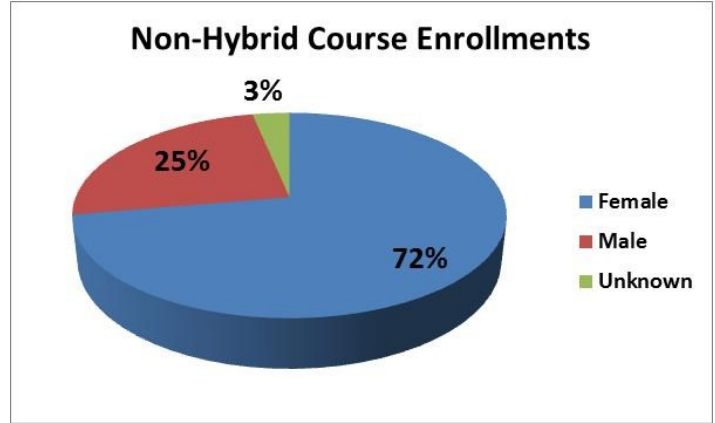
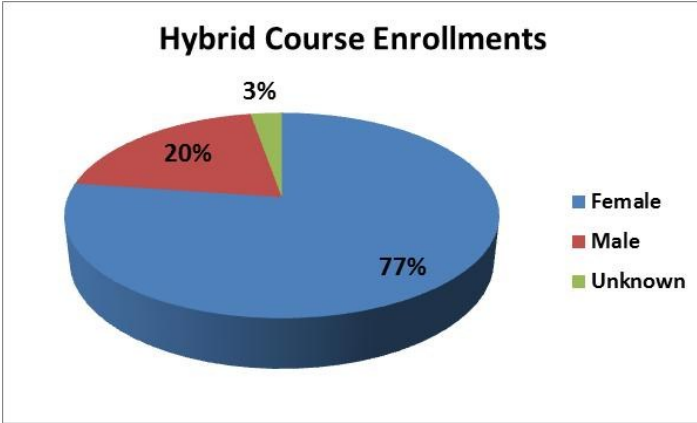


	<i>n</i>	Retained	% Retained	Success	% Success
Learning Community	36	28	77.78%	23	63.89%
Non-Learning Community	477	378	79.25%	331	69.39%
		Chi Sq.	0.834		0.491

	<i>n</i>	Retained	% Retained	Success	% Retained
All Hybrid	145	106	73.10%	86	59.31%
Learning Community	36	28	77.78%	23	63.89%

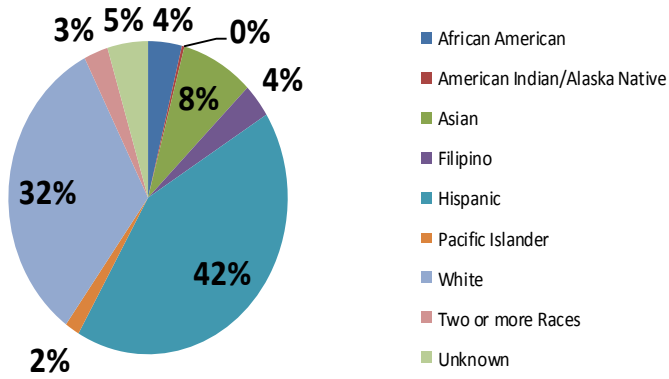
Participant Demographics

The majority of the participants non-hybrid (72%) and the hybrid (77%) course sections were females. The hybrid courses had a higher proportion of Asian students and a lower proportion of Hispanic students than the non-hybrid courses.



	Hybrid	Non-Hybrid
American Indian/Alaskan Native	2	0
Asian	20	33
Black - Non-Hispanic	5	20
Filipino	7	30
Hispanic	24	80
Multi Races	22	31
Pacific Islander	4	10
Unknown	6	43
White Non-Hispanic	55	121
Total	145	368

Student Ethnicity 2011 - 2012



2011 - 2012 Cañada College Student Ethnicity

African American	3.90%
American Indian/Alaska Native	0.30%
Asian	8.40%
Filipino	3.50%
Hispanic	42.20%
Pacific Islander	1.70%
White	32.50%
Two or more Races	2.80%
Unknown	4.70%