Overall Project

The Center for Achievement, Retention, and Student Success (CARSS) is a comprehensive program that addresses retention of freshmen and transfer students in STEM fields at the University at Albany-State University of New York (UAlbany).

We utilize a holistic model reliant on the creation of learning communities through group study and support. We have met the original program goals of: sustainability, institutionalization, provision of peer tutoring and peer/staff mentoring, ongoing project evaluation, and dissemination.

The program continues to grow as evidenced by stakeholder driven increases in the number of tutoring sessions from 109 in year one to 645 by the end of year three. To accommodate UAlbany STEM student population needs, the CARSS program has made >110 appointments of STEM tutors who offer tutoring assistance to STEM tutors. As a result, pass rates in key gateway courses have steadily improved. For example, the pass rate in Organic Chemistry I increased by 9% in year one and by 18% in year two, while the year one pass rate in General Chemistry I increased by 7%.

Features of CARSS project sustainability include the following:

- It has a dedicated permanent fully furnished space from which to operate
- UAlbany has committed to continuing the CARSS program coordinator staff line
- UAlbany has committed $150,000.00 annually in support of the CARSS program at the termination of the grant funding period

Goals

- Increasing the 4-year graduation rates of a cohort of freshman with declared STEM majors
- Increasing the 2-3 year graduation rates of transfer students entering into UAlbany in their junior year
- Institutionalizing the Center for Achievement, Retention and Student Success (CARSS)
- Increasing retention of historically underrepresented students in STEM majors
- Creating and supporting learning communities

Strategies

- Provision of free tutoring in STEM gateway courses
- Provision of review/recitation sessions
- Creation of an on-campus home
- Establishment of a STEM Tutors training course
- Aggressive dissemination: website (www.albany.edu/carss); brochure; faculty in-class support; participation in new student orientations
- Establishment of a bona fide, furnished, dedicated center space
- Securing financial commitment from the University Administration to permanently support tutor and coordinator salaries

Implementation: Identification of At-Risk Students

In the course of implementing the Center’s various programmatic elements, the necessity of early identification of STEM students who were “at-risk” of not being retained in their major became very apparent. To investigate this, we sought to:

1. Evaluate various early indicators that could be used to identify “at-risk” STEM majors at UAlbany
2. Determine the correlation between student course grades and their use of CARSS services (i.e., frequency of visit, duration of each visit and time in the semester of first visit)
3. Determine the extent to which CARSS has served “at-risk” students.

NOTE: The data used in this study were derived from students enrolled in General Chemistry I and II, and Organic Chemistry I and II, over the course of two academic years. These are critical gateway courses in the majors under study.

Influence of CARSS participation on performance in General Chemistry II and Organic Chemistry II

![Graphs showing the influence of CARSS participation on performance in General Chemistry II and Organic Chemistry II](image)

Performance in first semester of a two semester course as an “at-risk” indicator

![Graphs showing performance in first semester of a two semester course as an “at-risk” indicator](image)

Cumulative GPA as an “at-risk” indicator of student performance in General Chemistry I & II

![Graphs showing cumulative GPA as an “at-risk” indicator of student performance in General Chemistry I & II](image)

Cumulative GPA as an “at-risk” indicator of student performance in Organic Chemistry I & II

![Graphs showing cumulative GPA as an “at-risk” indicator of student performance in Organic Chemistry I & II](image)

Recommendations

Before the semester begins

- Identify STEM majors enrolled in General Chemistry I (CHM120) and Organic Chemistry I (CHM220) with a cumulative GPA of <2.5.
- Work with faculty to incentivize CARSS tutoring participation at the start of the semester for students with a GPA of <2.5. For optimal impact, this should occur during the first half of the semester.
- Require at-risk students to attend 5 or more tutoring sessions at CARSS per semester.
- Closely monitor the academic progress of “at-risk” students enrolled in General Chemistry I (CHM120) and Organic Chemistry I (CHM220).

After the first exam

Use a first exam cut-off of B- or below to identify “at-risk” students. This will flag those who may not have met the <2.5 GPA “at-risk” criterion, but who would benefit from CARSS tutoring early in the semester.

Challenges

- Lack of instructor buy-in can be a significant roadblock to early intervention
- Although the data indicates that student participation in CARSS could be increased through incentivization, poor instructor buy-in stymied the effectiveness of this approach
- Lack of incentivization of instructor involvement limits the ability to exploit the findings towards the goal of enhancing “at-risk” student performance.