

research on a two-year, commuter-based campus with many at-risk and first-generation students. This model provides opportunities to increase awareness of scholarly work among faculty and students, as well as to further meaningful scholarly endeavors. As a result of the Research Club, first- and second-year students have delivered 30 presentations at regional and national meetings, published more than nine peer-reviewed abstracts, and received six USC System awards from 2015 to 2017. Prior to the creation of the Research Club, only isolated opportunities existed for students to present or receive recognition for their research participation.

One strategy—improved accessibility to opportunities by undergraduates—came from *Characteristics of Excellence in Undergraduate Research* (CUR, 2012). The first step was to improve visibility of research on campus. It was learned that students were unaware of USCL's active scholars in multiple disciplines. Therefore, monthly lectures by students, faculty, and staff were established for club meetings. This lecture series seemed to be the easiest way to inform others about campus scholarship and provided a forum to promote student participation in research. Although the series boosted awareness of research production on campus, students still lacked understanding that they could be a part of the process.

The next step was to take a more active approach in recruitment of student researchers. As faculty members include “Integrative Learning” in course curricula, students could earn points toward their final grade by attending lectures and participating in research studies. Another facet of this approach was to create opportunities for peer mentorship and motivation. Research assistants were asked to share their experiences during club meetings, which modeled the role of students in the research process. However, interviews with research assistants revealed that even the most ambitious students lacked the confidence to ask instructors to join their research team. Faculty members had to actively speak about their desire to work with students and approach students individually to achieve the greatest success.

The Research Club sought to promote the benefits of participation in research. It was learned that students were unfamiliar with the ways that research could help them. They were attracted to the idea that research and presentation experience could be beneficial in applying for internships, jobs, or graduate school. These students were surprised to learn that such experiences and accolades could be added to their resumes.

This experience has illustrated that the “build it and they will come” mentality will not work with undergraduates. It often is assumed that, since the benefits of participation in such experiences are well known, students intuitively

would know the same. Much care has to be taken to cultivate a culture of research on campus and actively promote the opportunities for students.

Reference

Council on Undergraduate Research (2012). *Characteristics of Excellence in Undergraduate Research*. Washington, DC: Author.

A Preresearch Initiative Increases STEM Student Retention

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The benefits of an undergraduate research experience are well documented, but students often fail to take advantage of existing research opportunities because of low self-confidence and misconceptions about research. To address these issues, a series of preresearch activities was designed at Queensborough Community College (QCC) that were offered during spring, summer, or winter intercession. Students were recruited from an Introduction to Biology course and the first semester of the year-long general biology sequence for science majors. Student participation was voluntary. This “Gateway to Research” included both interactive detailed workshops on relevant topics and hypothesis-driven, hands-on research projects. Workshop topics included (1) maintaining a lab book, (2) understanding bioethics, (3) conducting a literature search, and (4) approaching the reading of a scientific paper. Several of the sessions were offered jointly to Gateway students and research students who shared their experiences in a grant-funded program. Students committed to 4–5 hour blocks per day for one week during summer or spring break, or two weeks during winter break. Projects focused on microbiology or cancer biology.

Formal lectures are avoided, but in small informal groups, students gained the basic knowledge to carry out the projects. Students would formulate hypotheses, design experiments (with guidance), and conduct the research. The cancer biology experiments required that the students learn the basics of cell culture and a common migration assay referred to as a wound healing or scratch assay. Culminating PowerPoint presentations were given by the students. They received certificates of completion and presented their results during the QCC-Honors conference in May.

Participants were guided to additional enrichment activities, and more than a third joined a research program. All the preresearch students persisted in a STEM curriculum at QCC and/or transferred to a four-year college with a STEM or health science concentration.