P1689/B709

Use of A Collaborative Summer Biology Research Program Model in Metagenomics to Increase Student Persistence Towards Bachelor's Degree Attainment

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During the Fall of each year many first-time college students enter undergraduate degree programs majoring in Biology for a myriad of reasons which include financial security, nobility of healthcare professions, or someone recommended Biology as a major to ensure both career and financial sustainability. However, research indicates that by the Fall of the second year, many Biology majors don't persist to sophomore level classes and change majors. This three-year study was aimed to enhance student persistence among Biology majors by fostering a culture of engagement through community support, improvement of retention strategies, providing hands-on research learning experiences through real world applications and building connections to the STEM community on the Lane College Campus and at large. Students participating in the Summer Biology Research Program were selected based on a completed application which included a statement of interest, STEM research committee screening, and a successful informal interview. The research program was held from May through June of each program year. Following a metagenomics research model, students were immersed in application based metagenomic research which employed scientific inquiry, analytical skills, self-efficacy, and a commitment to experimental competence and precision under the mentorship of three (3) Biology faculty. Students were encouraged to share in the workflow development and facilitation of daily tasks, working on collaborative teams. Year 1(2022) of the study consisted of two (2) students, Year 2(2023) consisted of seven (7) students, and Year 3 (2024) consisted of four (4) students. Building on the success of Years 1 and 2, two (2) students majoring in other degree programs changed their majors to biology to participate in the Year 3 research experience. Of the 13 students participating, 12(92.3%) of students persisted in Biology degree programs. Of the 12 students, four (4) students graduated with undergraduate degrees in Biology. One of those students completed an accelerated nursing degree program, one (1) student is in graduate school pursuing a degree in Forensic Science, and two (2) have been accepted to nursing degree programs and will begin in January 2025. Additionally, two (2) students received travel awards to present their research at national conferences, including the American Society of Cell Biology.