

STEP-UP Program

GOALS

Kapi'olani Community College's STEP-UP goals are to:

- Increase the number of students in the College's STEM pipeline from 185 to 485.
- Increase the number of students who have completed the Associates of Science in Natural Science (ASNS) degree from 0 to 290.
- Increase the number of students matriculating to two collaborating four-year institutions in Hawai'i from 90 to 280.
- Institutionalize STEP initiatives and provide ongoing support for STEM students through pre-college recruitment (Summer Bridge); support of their learning through mentoring, tutoring, and Peer-Led-Unit-Study (PLUS) sessions; and Undergraduate Research Experiences (URE).

STRATEGIES

Kapi'olani Community College's STEP-UP strategies are:

- The Summer Bridge Program
 - Students were taught how computer hardware and software work and demonstrate these skills through building a brand new computer system, installing the operating system, and improving their ability to use it efficiently for academic purposes. Computer-building was complemented by a Computer-aided project (CAD) using Solidworks™.
 - Biodiesel was formed using waste cooking oil provided by the KapCC Culinary Arts Program as part of the college's sustainability efforts. Students spent at least 3 hours consolidating their mathematical skills using an online program called ALEKS.
- Peer Mentoring and Tutoring

Peer mentors and student tutors were supported by STEP-UP to assist STEM students to learn various concepts and to help them in their ability to articulate ideas and methods.
- Peer-Led-Unit-Study (PLUS) Sessions

These sessions were created to allow STEM students to review scientific theories and methods through problem solving exercises. The sessions were conducted by students, for students and were supervised by the faculty teaching the related course. Students met once a week and practiced problems with the help of PLUS leaders.
- Undergraduate Research Experience (URE)

Students become more engaged in their courses when they are exposed to hands-on activities related to their field of interest.
- Intrusive Advising

The STEM coordinator, faculty, pathways coordinators, student organizations, and counselors utilized intrusive advising to recruit and retain STEM students.



Implementation Progress

UNDERGRADUATE RESEARCH EXPERIENCE (URE)

STEM student participation in undergraduate research begins with direct interaction with a STEM faculty mentor via a proposal process. This process introduces students to project design, research methodology, cost estimation, and expected results. The students learn tangible skills such as meeting deadlines, working independently while supporting a team, and developing a project from beginning to end. They then carry over these skills to their course work as STEM students and their careers as future scientists. In year three, we have extended our URE model to include additional research projects, such as solar tracking (solar energy), pupillometry (sleep research), biodiesel (sustainability), and ecology (hermit crabs). The number of URE students at KapCC has double since last year.



SUMMER BRIDGE

The STEP-UP program has supported 94 bridge students since the program began in the Fall of 2007. 79.5% are currently enrolled either at KapCC or at a four-year institution (7%). In year one, two feeder high schools and 34 students were impacted. The number of local feeder high schools represented at the summer bridge program has since increased from 2 in the summer of 2007 to 7 in 2009.

The students who enroll at the college are allowed to keep the computers that they build during the summer bridge in order to support their education. The ALEKS program has been very successful in improving our students' performance in the mathematics placement test (COMPASS); 71% of the students improved their raw COMPASS score. In addition, 27.5% of all participating students moved up at least one mathematics course level, 26.2% of the students moved up two course levels, and 1.4% jumped up three entire course levels at KapCC.

STUDENT ENROLLMENT IN UNDERGRADUATE RESEARCH EXPERIENCE (URE) PROJECTS

Year	Number of Students involved in research	
	Engineering Physical Science	Life Science
Year one	5	1
Year two	14	4
Year three	48	11

PEER MENTORS, TUTORS, AND PEER-LED-UNITS SESSION (PLUS)

In year three, 18 students were funded by STEP-UP to provide support services as peer mentors, tutors, and Peer-Led-Unit leaders. This retention effort has serviced 175 STEM students this year.

STUDENT PARTICIPATING IN MENTORING, TUTORING, AND PLUS ACTIVITIES

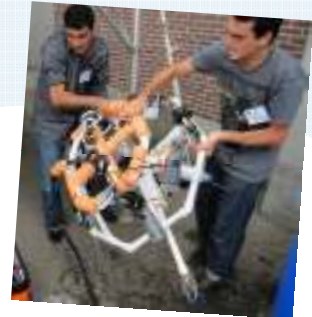
Mentors/Tutors/PLUS	Student funded	Year One	Year Two	Year Three	Total
		Students impacted	6	21	26
Tutors	Student funded	3	5	10	18
	Students impacted	23	42	112	177
PLUS	Student funded	3	10	6	19
	Students impacted	11	42	37	90
Total	Student funded	7	17	18	42
	Students impacted	40	105	175	320



Implementation Progress (Cont'd)

INTRUSIVE ADVISING EFFORTS

STEP-UP student enrollment increased by 60% between years two and three. The number of students enrolled in our ASNS degree increased by 177% in year three. The number of students who have transferred from our program to a four-year institution is now 31 and the number of students who have graduated with the ASNS degree is now 12.



STEM STUDENT ENROLLMENT

	Year one	Year two	Year three
ASNS Student Enrollment	25	44	122
ASNS graduates	0	4	12
STEM Students Enrollment	123	153	245
Transferred students	0	7	31



Opportunities and Challenges

CHALLENGES

With the adoption of the URE model by many newly engaged STEM faculty, providing funding for these experiences has become a challenge in regards to sustainability and institutionalization. On average, 12.3% of KapCC students (one out of eight) who have completed thirty credits (first year) at the college place into trigonometry or pre-calculus level math. Therefore, our students enter the STEP-UP program at a lower mathematical level than was initially anticipated. Consequently, students require more than the usual two-year period to complete the STEM coursework to be eligible for graduation and/or transfer.

MEETING THE CHALLENGES

Initiatives must be implemented at KapCC to:

- Provide financial support to students for the initial materials and supplies needed to implement the URE projects.
- Increase STEP-UP dissemination efforts to sustain the URE projects using private sector funding.
- Enhance the mathematics skills of all students whose entrance COMPASS placement is below the College math level by utilizing the STEM summer bridge model of using ALEKS online software.