Engaging Faculty and Students in Diverse Undergraduate Research Experiences: An Illustrative Case from CSU San Marcos

Gerardo M. González, Dean of Graduate Studies & AVP for Research, Charles De Leone, Physics Department, and the CSUSM Committee on Undergraduate Research (CUGR)

CSUSM CUGR Mission Statement

California State University San Marcos (CSUSM) values research. It aids in the discovery of new knowledge and is an important educational tool. Students who engage in undergraduate research are better prepared to rise to contemporary challenges. Faculty and students are supported and recognized by the University for their research and creative activities. Undergraduate research and creative activity are conducted in many forms at CSUSM:

- **Embedded in courses** - Anthropology, Biological Sciences, Biochemistry/Chemistry, History, Human Development, Literature and Writing, Nursing, Physics, and Psychology.
- **Co-curricular annual student research symposia** - Psychology Student Research Fair (20 years), Kappa Omicron Nu Upsilon (Human Development/Kinesiology) Honor Society Research Conference, Student Research Poster Showcase, and Symposium on Student Research, Creative Activity, & Innovation.
- **CSU Student Research Competition (SRC)** has been a successful program for our students. Historically, at least one CSUSM student has placed first in the CSU SRC undergraduate social sciences or sciences categories.
- **NEH, NIH, NSF, and private foundations** grants and awards to faculty have provided excellent opportunities for undergraduate students to be involved in research and creative activities.

Accomplishments & Successes

- Instituted the CSUSM Committee for Undergraduate Research (CUGR)
- Established an Undergraduate Research Faculty Fellow
- Increased diverse UGR activity
- Increased support for CSUSM undergraduates to present research at professional/scientific meetings

Overall, CUGR has made moderate progress on its action plan goals. For example, CUGR supported a philanthropic proposal to fund a CSUSM Center for Undergraduate Research, endorsed a CSUSM external grant proposal for a longitudinal study to assess the outcomes of undergraduate research experiences across the CSU, and provided leadership for developing a CSU peer-reviewed undergraduate research journal. CUGR continues to heighten the prestige of CSUSM undergraduate research and creative activities locally, regionally, in the CSU, and nationally.

CSUSM Celebrates Diversity

CSUSM is an Asian American and Native American Pacific-Islander Serving Institution (AANAPISI) and an Hispanic-Serving Institution (HSI). Students from underrepresented, low-income, or first generation populations benefit from external grants and campus centers (NLRC and OTRES) that support undergraduate research initiative through:

- Academic enrichment activities
- Proactive tracking of students and intrusive advising
- Accessible high quality mentoring
- Inclusive and early research experiences
- Graduate school and career-building preparation
- Financial support

Challenges

- Intensive faculty workload
- Equivocal UGR expectations for faculty
- Limited infrastructure to support faculty/student research
- Lack of a dedicated office for student research
- Need for long-term sustainable funding
- Limited student outcome data
- Sustaining an inclusive climate

Short-Term Goals

1. Strengthen our campus administrative and organizational infrastructure for faculty-mentored undergraduate research (UGR), such as establishing a centralized undergraduate research office with a director to coordinate activities across the campus.
2. Develop benchmarks (e.g., baselines and metrics) for assessing student learning outcomes and gather data to track and report outcomes associated with UGR.
3. Pursue external resources to support undergraduate research and obtain faculty resources, and to secure equipment/facilities to enhance our physical infrastructure.

Solutions Going Forward

1. **Create an Office for Undergraduate Research and Creative Activities (OURCA):**
   A dedicated campus-wide unit that coordinates undergraduate research and creative activities is best suited to institutionalize and sustain faculty-mentored activities and opportunities.
2. **Develop clear written expectations for faculty to engage in undergraduate research:**
   Academic units report that expectations for undergraduate research and creative activities are not clearly outlined and communicated. Faculty expectations for engaging in undergraduate research and creative activities can be developed through departmental tenure/promotion standards as well as college and university tenure/promotion policies.
3. **Secure funding for undergraduate research:**
   To support student research, there should be training and resources to assist with securing external and internal funds to support research projects and student participation in research. Potential external sources include extramural grants and private donors.

OURCA can coordinate and implement CUGR’s goals and recommendations toward institutionalizing undergraduate research and creative activities. OURCA can lead and assist with the development of faculty expectations, funding, and assessment in support of undergraduate research. Proactive leadership and action is essential to institutionalize undergraduate research opportunities.

Dean Gerardo Gonzalez and CUGR Faculty Fellow, Dr. Mafutki Imara with the 2014 Symposium on Student Research Finalists