Abstract

Opportunities for student-faculty research at primarily undergraduate institutions (PUIs) such as Webster University provide great value at the level of the students, faculty and the institution itself. First, involvement in undergraduate research facilitates students’ interest in their own learning, while the process of engaging in collaborative research supports the development of a growth-oriented mindset. These activities serve to cultivate valuable critical thinking skills and an ability to work independently, providing students with foundational tools for lifelong learning. Second, faculty can maintain connections to their professional areas of expertise and share that intellectual curiosity with students. Third, having an active community of scholars at the institution enhances its reputation and promotes current, relevant curricula. The mission of the Council on Undergraduate Research (CUR) is to support and promote high-quality undergraduate student-faculty collaborative research and scholarship. This poster shares insights from a recent CUR Institute on Developing Undergraduate Research Programs at PUIs. We will present strategies for developing an undergraduate research program within the context of PUIs in general, as well as our perspectives and experiences with respect to how these strategies can be implemented at Webster University in particular. Our participation in this CUR Institute was supported by Academic Affairs and the College of Arts and Sciences.

Step One: Identify and Gather Resources

- Departmental/University support
- Faculty Research Grant
- Student/Faculty Collaborative Research Grant
- External funding sources (private/government grants)
- Collaborations
- Discipline-specific resources
- CUR (Council on Undergraduate Research)

Step Two: Determine Goals

- Why do you want to engage in research?
  - Publications
  - Grants
  - Integration with curriculum development
- Why would students want to get involved?
  - Hands-on experiences
  - One-on-one mentoring
  - Resume building

Step Three: Identify Potential Issues

- Time management and organization
  - Are you receiving “credit” for your efforts?
- Resource management (references, lab materials)
  - Doable, less technical abilities
  - Opportunities for peer mentorship
  - Unique, good stopping points
- Selection of undergraduate researchers
  - Recognize realities of UNDG students
  - Choosing collaborators
- Writing for publications and funding
- Getting administrative support (funding, course releases, facilities/equipment)

Step Four: Implementation Strategies

- Research program vs individual student projects
  - Student work should fit into your model
- Write protocols to reduce wasted time
- Curriculum integration (multiskilling)
  - Research projects as a classroom exercise
- Course topics drive research questions
- Collaborations and networking

Step Five: Create a Timeline and Vision

Simplified Example:

- In 10 years: have pipeline set up to integrate students into research and helping to train other students in a class
- In 3-5 years: refine the research project framework for opportunities for peer mentorship
- Time management and organization
  - Are you receiving “credit” for your efforts?
- Resource management (references, lab materials)
  - Doable, less technical abilities

Sample Outcomes

- Hands-on lab work
- Outstanding Research Award, presented at the inaugural Taking the Lead Undergraduate Research Conference
- Hands-on lab work
- Poster presentation at the AAAS (American Association for the Advancement of Science) meeting in Chicago
- Poster presentation at the Midwest Psychological Association (MPA) Annual Meeting in Chicago
- Student presentation of research and helping to train other students in a class

We would like to thank the Dean’s Office of the College of Arts and Sciences and Academic Affairs for supporting our participation in the CUR Institute on Developing Undergraduate Research Programs at PUIs (November, 2014)

We would like to thank the Dean’s Office of the College of Arts and Sciences and Academic Affairs for supporting our participation in the CUR Institute on Developing Undergraduate Research Programs at PUIs (November, 2014)

The Art and Craft of Research at Teaching-Focused Institutions

Eric Goedereis\(^1\) and Mary Lai Preuss\(^2\)

\(^1\)Department of Psychology, Webster University
\(^2\)Department of Biological Sciences, Webster University

1. Identify and Gather Resources
2. Determine Goals
3. Identify Potential Issues
4. Outline a Strategy
5. Create a Timeline and Vision

Sample Outcomes

- Poster presented at the annual meeting of the Missouri Undergraduate Psychology Conference, Saint Charles, MO. (2nd Place, Empirical Posters Group)

- Poster presented at the annual meeting of the Midwestern Psychological Association (MPA), Chicago, IL

- American Association for the Advancement of Science Annual Meeting; 2014 Feb 16; Chicago, IL.

- Poster presented at the 6th annual meeting of the Society for the Study of Emerging Adulthood (SSEA), Chicago, IL.

- Poster presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.

- Handaluk L, Preuss ML, Jez JM. “Sulfur metabolism as a support system for plant heavy metal tolerance.”
- Detoxification of Heavy Metals. Eds. Sheramenti I and Varma A. Springer-Verlag, NY. p289-302


We would like to thank the Dean’s Office of the College of Arts and Sciences and Academic Affairs for supporting our participation in the CUR Institute on Developing Undergraduate Research Programs at PUIs (November, 2014)