

Best Practices for Providing Undergraduate Student Research at Primarily Undergraduate Institutions

Developed by the Idaho INBRE Program 2020 Blue Ribbon Task Force

Professor of Biology Jane S. Finan, Lewis-Clark State College

Professor of Biology Sara Heggland, The College of Idaho

Professor of Chemistry Daniel Nogales, Northwest Nazarene University, Chair

Undergraduate student research is a high-impact practice proven to enrich the college experience, increase retention, and make learning relevant. High-quality STEM education includes faculty-student research that investigates problems with unknown solutions. The following best practices come from two decades of developing, expanding, and sustaining undergraduate student research opportunities **in Idaho** and include several practices set by the Council on Undergraduate Research^a.

1. Provide administrative support for undergraduate student research:

Student research at a primarily undergraduate institution should be integral to the institution's strategic planning. Sustainable research programs must be supported with sufficient reassignment of teaching credit, laboratory space, equipment, and start-up research packages for new faculty.

2. Provide professional development for faculty doing research:

Support for internal professional development through workshops and mentoring, as well as, funding for travel to conferences is essential for faculty members to sharpen their skills in teaching, research, and student mentoring.

3. Recognize faculty for research activity and expect excellence:

There should be clear and visible expectations and recognition for faculty who engage in research as a high-impact teaching tool. Workload assignments should accurately represent faculty participation in research.

4. Provide internal funding and facilitate acquisition of external funding for research:

The institution should provide internal funding and the environment for faculty to compete for external grant funding, and, if awarded, the time to complete the work. In doing so, the institution and faculty can leverage internal and external funding to sustain the campus research culture. A centralized office for this support should be established.

5. Facilitate early and multiple opportunities for student research:

Availability of multiple research experiences, including those that provide bridges for young students to the college or university, is vital for engaging students and promoting their growth as scientists.

6. Integrate research into the curriculum:

High-quality faculty research can inform teaching and classroom activities; by and large, research and teaching are inseparable. Faculty should provide clear research expectations for students in their syllabi, learning outcomes, and program requirements.

7. Support and sustain summer research programs:

A summer research program to develop future leaders, faculty, and researchers should be provided. This program should include programmatic and professional development activities.

8. Require dissemination of research results:

Dissemination of results completes the research cycle, increases awareness of the work, ensures the findings are shared outside the institution, and is crucial in providing students a competitive edge when pursuing employment and graduate or professional degrees.

9. Develop and implement assessment processes for undergraduate research outcomes:

The impact of participation in undergraduate research should be assessed annually to determine the effects on retention, graduation rates, acceptance rates to graduate or professional programs, and the development of job-related skills. Assessment is an important tool for justifying and improving undergraduate educational experiences.

^aThe Council on Undergraduate Research (CUR), founded in 1978, is an organization of individual, institutional, and affiliate members from around the world. CUR members share a focus on providing high-quality and collaborative undergraduate research, scholarly, and creative activity opportunities for faculty and students. CUR believes that faculty members enhance their teaching and contribution to society by remaining active in research and by involving undergraduates in research, and that students engaged in undergraduate research succeed in their studies and professional advancement.