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.

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[a]The 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.

Best Practices in Supporting Undergraduate Student Research
Lewis-Clark State College Addendum

Professor of Chemistry Matthew A. Johnston, Ph.D.
Associate Professor of Biology Eric P. Stoffregen, Ph.D.

The purpose of this document is to propose institution-specific recommendations for ongoing, sustainable support for high-impact student research at LC State that align with the goals of the College's Strategic Plan of increased applied and experiential learning in the form of undergraduate student research opportunities. Several Natural Science faculty members have active research groups that merit consideration for these research activities counting as part of their "in-load" teaching assignments.

Recommendation: Lewis-Clark State College executive administration pledge to support an ongoing 25% in-load teaching assignment for undergraduate research mentorship as part of the INBRE-5 renewal.

Specific Metrics

In order to be considered for in-load teaching support for research, we propose the following criteria must be met and maintained:

Minimum of three active undergraduate researchers

Students should be working a minimum of three hours per week (1 credit or its equivalent) to be considered active undergraduate researchers. While faculty are encouraged to mentor individual students on smaller projects or questions, an active research group should have continuity in mentoring students and consistent engagement on the scientific questions relevant to the lab.

Record of seeking funding to support student research

A variety of funding mechanism are available to support undergraduate research, both internal to LCSC, as well as from external sources. In particular, INBRE, HERC and Work Scholars provide accessible internal funding to support student activity and should be utilized.

This metric does not require successful funding, only demonstrated activity of seeking such funding on a regular basis.

High Quality Dissemination of Student Research & Scholarship

Active research groups should regularly disseminate their research results to the broader scientific community, with students acting as presenters and/or authors. Examples of appropriate means of dissemination include primary literature publications and poster and/or presentations at national or regional scientific meetings.

Internal LCSC-specific forums for research, such as the Annual Research Symposium, while beneficial to students for practicing presentation skills, do not communicate results to the broader scientific community and are NOT sufficient to meet this expectation.

Reporting

Faculty will report on the above metrics annually as part of their Annual Evaluation. Continuation of research as part of their inload teaching assignment is subject to review and approval by both the Division Chair and Dean of Liberal Arts & Sciences.