Undergraduate Research Learning Communities for First-Year and Lower-Division Students

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The undergraduate research experience at Cleveland State University (CSU) is a progressive new learning community. Through this program, incoming students from almost any major can be immersed in CSU’s intellectual community and engaged in research as early as their first semester on campus. Opportunities for undergraduate research at CSU have long existed for select groups but the undergraduate research learning community now provides early opportunities for a wider audience of first-year students to be exposed to research practices that reach beyond the natural sciences into many disciplines. The program serves to advance CSU’s overall mission as an urban, commuter university to provide excellent education, and we try to proactively address and meet the needs of the diverse population of students enrolled. Perhaps more important, this initiative has helped more students to understand research as an important dimension of higher learning, and has encouraged their active involvement in the research process.

**COLLABORATIVE INQUIRY AND DISCOVERY**

CSU faculty, undergraduate program directors, deans, and staff collaborated for months to conceptualize our vision and goals for a meaningful undergraduate research experience and agree upon an acceptable model. Some felt that first-year students were not yet ready for such an experience. These campus professionals finally came to support the model based on the notion that some first-year students have successfully completed Advanced Placement courses in their high schools and have participated in science fair projects at local, regional, and national levels. There was sufficient evidence of requisite academic preparation to engage in and benefit from early exposure to research. Many first-year students possess the intellectual curiosity to engage in meaningful research and have the potential to be trained as budding scientists in their intended majors.

**UNDERGRADUATE RESEARCH COMMUNITY OF LEARNERS**

We agreed upon a structure that represented a departure from our existing learning community model. A typical CSU learning community experience lasts one semester and features three to four groups of four courses linked thematically and scheduled in a group. Cohorts of twenty-five to thirty first-year students coenroll in the courses and are supported through a systematic process of peer mentoring, coaching, intensive advising, and a variety of other university supports. By contrast, the new undergraduate research learning community is composed of fifteen faculty participants who are actively involved with research, and each works closely with one or two students. Because the program is new, students were identified either on the basis of their expressed interest in the research or their demonstrated performance in other classes. As the program continues and more students report their experiences, we anticipate that students will initiate the contacts and more will request to enroll.

The undergraduate research learning community faculty commitment requires regularly scheduled encounters with students and the intentional involvement of students in meaningful work. Faculty also agree to prepare and deliver one presentation to the community of learners sometime during the semester, at planned weekly sessions. These presentations afford students the opportunity to learn about the exciting work faculty members are doing, and to be exposed to the various research methods used in different disciplines. One tangible benefit for students is the opportunity to enroll in an independent study course, offered in the faculty member’s department for variable
credit, based upon the learning agreement and specific outcomes measured at the end of the semester. Learning agreements outline expectations, learning outcomes, and measures and include the following components:

1. commitment to regular faculty/student meetings and encounters around the research project
2. satisfactory completion of assigned research activities and assignments as determined by faculty research instructor
3. participation in a scheduled Peer Research Community for students—enrollment in a one-credit-hour Introduction to University Life course, customized for students conducting undergraduate research
4. specific student outcomes due at end of the semester, such as submission of one final scholarly paper, preparation and submission of one or more conference proposals related to the research activities, or development of a poster or oral presentation about the research

Faculty members’ presentations about their research often include student mentees, creating an invaluable experience for any first-year student, especially an aspiring researcher. Faculty enjoy the opportunity to showcase their research. For students, collaborating with faculty and participating in these sessions develops presentation skills and builds a sense of efficacy about the research. We are currently investigating ways to include community leaders from external agencies—such as chemical industries, NASA, and high-profile medical and health care facilities—as presenters and guests in these sessions.

**UNDERGRADUATE RESEARCH LEARNING COMMUNITY GOALS**

Participating faculty mentors agreed upon three specific goals for the design of the undergraduate learning experience: (1) students will have meaningful involvement in active research activities, (2) students will grow intellectually, and (3) students will gain a foundational understanding of research methods. Kolb’s experiential learning theory (Kolb 1984) was useful as we considered elements of the learning community design. This model of experiential learning describes an idealized learning process as one that involves a recursive cycle of experiencing—having a concrete hands-on experience; reflecting—questioning, conversing, and journaling about the experience to draw meaning; observing—watching and drawing conclusions from what is seen and heard; and testing—building theories of one’s own. Our undergraduate research learning experience provides the opportunity for students to touch all the bases and have a distinctive and powerful learning experience.

**CONCLUSION**

We realized great benefit from the inclusion of department chairs, and, in some cases, undergraduate program directors, with faculty and staff in the design and implementation of the undergraduate research experience. Even though many of these department chairs and program directors held administrative assignments, some were also involved in active research. The institution supported their participation in our program, as it provided opportunities to mentor students directly. It should also be noted that the involvement of such faculty and administrators can be quite challenging. For example, it was difficult to facilitate and negotiate the varying roles and priorities of students, faculty, and the department with respect to undergraduate research activities. Ultimately, having these individuals involved and actively engaged in the implementation has helped advance the concept of undergraduate research learning communities; they advised us as we balanced the components of our new initiative with the overall planning needs of the academic programs. These individuals also promoted the undergraduate research concept, identified incentives for students and faculty in their various departments, and identified new research opportunities as well as rewards, scholarships, and prizes. Undergraduate program directors provided another invaluable service to our efforts by facilitating curricular, cocurricular, and scheduling elements of the research learning community in a manner that was consistent with departmental priorities and university policies.

Involvement in hands-on activities and close relationships with faculty appear to contribute to students’ sense of efficacy and self-confidence and support their efforts to persist. Undergraduate research also provides students opportunities to explore “the real work” of a scientist or researcher as they consider their own career paths and desires for higher education. These positive benefits of intellectual growth, integrative and critical thinking, career exploration, and confidence building are perfectly aligned with our institutional goal to create engaged learning for our students. Involving talented beginning students and dedicated CSU faculty in research helps invigorate the undergraduate experience for the campus as a whole. One could use the term “glue” to describe the relevance of research in creating engaging student–faculty communities. It helps to connect the forces of teaching and learning in meaningful ways for students and faculty as they become collaborators and colearners in the process (Janusik and Wolvin 2007). At CSU, undergraduate research learning communities set high expectations for incoming students looking for a university experience shaped by academic and social experiences with faculty who are engaged in contemporary research in their fields.

**REFERENCES**

