

**Let's Do It!: Strategies for Engaging Undergraduate Students in Research**

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### **Introduction/Need for Innovation or Idea**

Engaging undergraduate students in research can be a daunting task for any institution, particularly institutions primarily targeted at undergraduate education where few graduate students are present as models. This challenge serves as the catalyst for this innovative idea. Little (2020) indicated, when undergraduate students participate in research, there is a positive impact on their studies, enhanced presentation skills and confidence, the development of research efficacy, and increased engagement in out of class activities. When tailoring undergraduate research experiences, faculty mentoring is needed and it is necessary to focus on student-centered approaches where prior knowledge is considered (Splan et al., 2011). When students engage in research as undergraduate students, they are more likely to pursue graduate education. The strategies outlined in this innovative idea are the product of a novel approach by the faculty at a polytechnic institution where faculty and student research are secondary to experiential learning. However, there is a need to infuse the teacher scholar model more intentionally when working with undergraduates to expand their opportunities, thus these strategies for concerted student engagement were introduced.

### **How it works/Methodology/Program Phases/Steps**

To foster undergraduate student engagement in research opportunities the Agricultural Education & Communication Department at Cal Poly, San Luis Obispo has implemented an approach which includes five key elements for success:

1. Strategic Planning: Faculty members regularly discuss research projects and interests to look for overlaps and discuss ways undergraduate students can be engaged with research.
2. Resource Identification: Within the college and university exist several sources of funding to encourage undergraduate students to engage in research with faculty. This funding can include stipends or travel funds for students. The faculty regularly seek funding sources and work to align their own research to maximize the potential engagement of undergraduate students. Students may also be interested in enrolling in special problems or independent study courses to increase their academic efficiency through the acquisition of upper division/graduate credits.
3. Opportunity Dissemination: When research opportunities are available, market via multiple channels, including weekly department email newsletters, word of mouth, and targeted emails to specific students that may have informally indicated interest.
4. Leverage Courses: All students are required to complete a senior project course to graduate from both undergraduate degrees within the department. Typically, students participate in a group facilitated literature review and project proposal process. If a student has worked with a faculty member in a research project resulting in a college, university, or conference presentation, they earn credit for their senior project course.
5. Build on the Past: Students who worked with faculty on research are the best promoters of opportunities to other students. This is powerful when the students have traveled to research conferences and interact with faculty and students from other institutions.

### **Results to Date/Implications**

During the 2023-2024 academic year, 5 faculty were engaged in research projects including 11 undergraduate students from 3 different majors: 1 student from a major outside the

department. Students presented posters ( $n = 7$ ) at two on campus research seminars; submitted posters ( $n = 5$ ) for presentation at one national research conference, where four were accepted for presentation; and have submitted posters ( $n = 4$ ) for presentation at one regional research conference, which were all accepted for presentation. Additionally, two academic publications are awaiting review where four undergraduate students served as co-authors.

Four of the students were a part of a university research program which provided \$4,000 for each student to engage in research and \$2,000 for each faculty member who served as a research mentor for the student. Two students were a part of a work study program where they received compensation as employed research assistants for faculty in the amount of \$20 per hour for up to 120 hours over the course of the term. The research conference presentations resulted in the department taking six undergraduate students to a national research conference. During this conference, students were exposed to additional research from across the country, engaged with faculty from different institutions, and met with other undergraduate and graduate students pursuing education within majors of similar interest. Additionally, students had the opportunity to tour a new college campus and explore the broader campus community of the host university.

### **Future Plans/Advice to Others**

As a department, the faculty plan to continue to work together and identify opportunities for undergraduate students to collaborate on research projects and conference submissions. There is also an interest in continuing to capitalize on the funding available to support undergraduate research as well as expand the types of opportunities that are targeted including those which were not explored during the 2023-2024 academic year. Another plan includes the cross collaboration of undergraduate and graduate students to provide a more comprehensive experience to undergraduate students where they can develop self-efficacy as researchers via vicarious experiences and positive performance outcomes (Bandura, 1977). Additionally, the faculty have not been explicitly collecting feedback from undergraduate students to evaluate their experiences in these projects. Collecting data via critical reflection (Borton, 1970; Driscoll, 2007) may provide an enhanced experience for future budding undergraduate researchers and help the faculty refine how they mentor students in research.

As advice to others, it is recommended to look for opportunities to leverage existing resources to incentivize these types of projects. Additionally, exploring what students are interested in and what aligns with their career and educational goals can provide context for the types of research opportunities that may be the most interesting to students. There is a need to be nimble as a faculty researcher to adapt your own research agenda to what may entice undergraduate students to provide them with a taste of a positive experience. Additionally, being inclusive of all students and extending opportunities to those from diverse backgrounds and majors can enhance the research experience and provide a broader and interdisciplinary community for the students involved.

### **Costs/Resources Needed**

There are minimal costs specifically involved with including the students in research. However, there may be costs associated with the conducting of research itself. It is suggested to look for overlap where research is already occurring. Additionally, when students have research accepted for presentation, there are costs associated with printing posters and conference travel. These will vary from conference to conference.

## References

- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2), 191. <https://doi.org/10.1037/0033-295X.84.2.191>
- Borton, T. (1970). *Reach, touch and teach*. Hutchinson.
- Driscoll, J. (ed.) (2007). *Practicing clinical supervision: A reflective approach for healthcare*. Elsevier.
- Little, C. (2020). Undergraduate research as a student engagement springboard: Exploring the longer-term reported benefits of participation in a research conference. *Educational Research*, 62(2), 229-245. <https://doi.org/10.1080/00131881.2020.1747360>
- Splan, R. K., Porr, C. S., & Broyles, T. W. (2011). Undergraduate research in agriculture: Constructivism and the scholarship of discovery. *Journal of Agricultural Education*, 52(4), 56-54. <https://doi.org/10.5032/jae.2011.04056>