STUDENTS AS RESEARCH PARTNERS:
Better Teaching, Better Scholarship

Caitlin Bishop, Hannah Duran, Keaton Kirkpatrick, Mariah Kornbluh, Lisa Ott
In this session:

- Undergraduate Research as a High-Impact Practice

- Models of Undergraduate Research at Chico State
  - Course-embedded lower division
  - Course-embedded upper division
  - Independent

- Conversation: Expanding and Coordinating Campus UGR Activities
Undergraduate Research

An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline

(Council on Undergraduate Research)

- Can occur in every discipline, and at every level
UGR as a High-Impact Practice

Engaging students in research as undergraduates promotes:

- Higher levels of engagement and satisfaction with college life
- Better retention, GPAs, and graduation rates
- More frequent pursuit of graduate and professional studies
- Stronger sense of identity development
- Clearer career direction

➢ These impacts are most pronounced for students of color, low income and first generation students.

(Brownell & Swaner, 2010; Finley & McNair, 2013; Kuh & O’Donnell, 2013; Hathaway et al., 2002; Lopatto, 2006; Nagda et al, 1998; Seymour et al., 2004)
Embedded Research in a Lower Division General Education U-Course

By: Caitlin Bishop, Hannah Duran, and Keaton Kirkpatrick
What We Will Cover

- Theories that undergird the desired learning outcomes and First Year Ethnography project
- Description of the First Year Research Ethnography project
- How the project engaged students in real-world research and high impact practices
- Topic for discussion
Possible selves “represent specific, individually significant hopes, fears, and fantasies” that are derived from representations of the self in the past and include representations of the self in the future.
Possible selves are important to the U-Course because the authors argue that “[d]evelopment can be seen as a process of acquiring and then achieving or resisting certain possible selves.”
Possible selves are influenced by the self and by other people who act as models.
The Social Theory of Learning (from Wenger’s Communities of Practice)

“[T]he primary focus of [the social theory of learning] is on learning as social participation. […It is an] encompassing process of being active participants in the practices of social communities and constructing identities in relation to these communities.”
Legitimate Peripheral Participation:
The process of new participants in a community participating “in the actual practice of an expert, but only to a limited degree and with limited responsibility for the ultimate product as a whole”

It is the process of newcomers moving from legitimate periphery to full participation (which is where “peripheral participation leads [...] It places the emphasis on what partial participation is not, or not yet”).

Lave & Wenger Situated Learning
Nasir & Cooks “Becoming a Hurdler”

1) material resources: “the content of learning”
“the physical environment, its organization, and the artifacts in it [that] support one’s sense of connection to the practice”

2) relational resources: the “‘how’ and ‘why’ of learning”
“positive relationships with others in the context that can increase connection to the practice”

3) ideational resources: “the goal of learning”
“the ideas about oneself and one’s relationship to and place in the practice and the world, as well as ideas about what is valued or good”
With learning and identity in mind, one of the goals of the course design was to encourage students—who were newcomers to the college learning community—to develop an identity as an ethnographer and view themselves as such.

This was accomplished through the First Year Research Ethnography, one of the two major projects of the course.

“Purpose: The goal of the FYRE project is to introduce students to the practice of ethnography. Ethnographic research is the primary method used by cultural anthropologists to study culture, human behaviors and the factors that shape these. We will discuss ethnographic methods in more detail throughout the course, but the primary ways you will be collecting data on the experiences of first-year students at Chico State is through: (1) formal interviews of students, and (2) guided reflections on your own experiences as first-year students.”
Ethnography Research Partners

The students interacted with research partners — or stakeholders (university deans, professors, EOP faculty, Career Center faculty, etc.) who have a strong interest in and responsibility for first-year experience.

Upon interviews with the research partners, groups were able to form interview questions that addressed their chosen area of first-year experience that worked towards meaningful participant responses and findings.
The Ethnography’s Deliverables

There were two primary deliverables for the project:

A research paper that included the research questions, methodology, findings, and recommendations.

AND

A public presentation of the research process, findings, and recommendations that were presented to the research partners in a public forum.
George D. Kuh’s *High Impact Practices*

Kuh’s research on high impact practices—previously labeled “effective educational practices”—reveal substantial educational benefits for students, particularly for students from communities that have been historically underserved in higher education.

“...if the essential learning outcomes are goals, then our curricular, cocurricular, and pedagogical practices need to be recognized as the means to achieving these larger educational ends. We can help our students improve by making these kinds of practices the norm, rather than the exception.”

High-impact practices that educational research suggests increase rates of student retention and student engagement:

1. First-Year Seminars and Experiences
2. Common Intellectual Experiences
3. Learning Communities
4. Writing-Intensive Courses
5. Collaborative Assignments and Projects
6. Undergraduate Research
7. Diversity/Global Learning
8. Service Learning, Community-Based Learning
9. Internships
10. Capstone Courses and Projects
Key High Impact Practices

Service Learning, Community-Based Learning

“field-based “experiential learning” with community partners is an instructional strategy—and often a required part of the course. The idea is to give students direct experience with issues they are studying in the curriculum and with ongoing efforts to analyze and solve problems in the community”

Undergraduate Research

“...The goal is to involve students with actively contested questions, empirical observation, cutting-edge technologies, and the sense of excitement that comes from working to answer important questions.”
Results

Quotes from research partners after the public presentation:

- “Students’ research questions and recommendations were well thought out. I hope they move forward with their recommendations.”
- “Their ideas illustrated that as staff, we really need to communicate better with students about resources.”
- “Great ideas about how to get students engaged and connected right away on campus.”

There was quite a bit of positive feedback from students with an email from a student relaying that she was “thankful for being pushed.”

Overall, between feedback from both the research partners and students, the course design was successful in orienting novice learners to perform research at the college level by establishing a clear purpose of their work and helping them gain membership into a learning community by giving them identities as ethnographers.
Topic for Discussion

Possibly the most exciting and impactful components of the research project was the public presentation that afforded students an experience of the purpose of their work as they presented their research to real, engaged audiences.

That in mind, why might you want to try this? How could you incorporate assignments with real, public audiences into your own courses?
References


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Students as Research Partners: Community-Based Research

Mariah Kornbluh, Susan Roll, & Jennifer Wilking

Tipping Point
January 2018
Overview

- Issue
- Course Design
- Evaluation
- Lessons Learned
Issue

■ Communities across the country are challenged by a growing homeless population

■ Local municipalities are struggling to balance limited resources, varying political agendas and a lack of concrete data in trying to find solutions to this complex problem.

Issue

- Community-Based Participatory Research:  
  - A collaborative effort in which community members and academics engage in research around an identified community need

- Student Outcomes:  
  - Personal Empowerment
  - Investment in Research and Public Issues
  - Civic Engagement

(Lichtenstein et al., 2011; Stocking & Cutforth, 2003; Strand et al., 2003).
Class Design

- Three classes:
  - *Introduction to Research Methods (POLS)*
  - *Community Psychology (PSY)*
  - *Social Welfare Policy, Programs & Services (SWK)*

- Large group 40-50% of course meetings:
  - *Shared readings*
  - *Interdisciplinary small groups*
  - *Service learning assignment*
  - *Community speakers/consultants*
  - *Make a Difference Day*
Class Design

■ Student Responsibilities:
  – Develop research instrument
  – Data collection
  – Analyze the findings
  – Generate policy recommendations

■ Fall 2017:
  – Two surveys soliciting information from people experiencing homelessness and the concerns of housed individuals regarding homelessness within the local community (N = 256).

■ Fall 2018:
  – Interviews with the homeless focusing on key policies and community issues (i.e. bathroom access, alternative housing, etc.) (N = 45).
Evaluation

- Mind Maps
- Retrospective Surveys
- Focus Groups
Figure 1.

Concept Maps & Network Density change over time
<table>
<thead>
<tr>
<th>Items</th>
<th>Pre</th>
<th>Post</th>
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<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Real World Application</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knew how to conduct research to inform my community</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Critical Consciousness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding the complexity of addressing homelessness in Chico</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Civic Engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knew how to get involved to promote positive change surrounding homelessness</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Felt inspired to get involved and address community problems</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Identify Preconceived Biases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informed on the issue of homelessness</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
Real World Application: It [the class] made me realize how we applied what we were learning in the class to the real world. Everything we were learning about homelessness from the psych aspect of it... was applied to the research questions, the actual [service day], and it just like, made me realize...this is a local issue that is...it’s something that we have to deal with. It was very impactful for myself, and... I learned a lot.
Civic Engagement: ...civic participation’s definitely really important. After taking this class I’ve definitely scrutinized our City Council candidates a lot more. Even when I talk to my friends about issues surrounding homelessness...I definitely don’t let them get off the hook when they just make blatant statements that doesn’t really have concrete fact to back it up. It has definitely changed my outlook on how I talk to my friends when we do talk about policy.
Lessons Learned

- Roles in the group project should be clearly articulated, with each discipline having a specific role, and individual students fulfilling specific tasks.

- Community collaborations could be strengthened by making the output more readily accessible, and engaging community members in data collection, analysis, and dissemination.
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STUDENT RESEARCH BEYOND THE CLASSROOM

Dr. Lisa S Ott
Department of Chemistry
STUDENT RESEARCH IN CHEMISTRY

- enroll for 1-3 units of credit during the semester
  - in collaboration with one or more faculty advisors

- apply for the Chemistry Summer Research Institute (CSRI)
  - founded in 2007, a formal 10-week program of research, seminars, and workshops
  - 12-20 students per summer
  - now joined by Physics with a formal PSRI program, and in collaboration with Biological Sciences, Geological and Environmental Sciences, Engineering, Anthropology, and the Center for Water and the Environment
  - High School Scholars program for CSRI
  - students are paid approx. $3500 and earn a unit of credit
  - funding primarily comes from faculty grants, RESP, CSUPERB, and industry partners
    - since earning HSI designation, many students are funded through Chico STEM Connections Collaborative (CSC²)
Welcome to CSC²

Chico STEM Connections Collaborative (CSC²) offers support, resources, and opportunities to Chico State’s underrepresented students majoring in engineering, computer science, construction management, natural sciences, and agriculture.

The purpose of CSC² is to increase the recruitment, retention, and graduation rates as well as accelerate completion of science, technology, engineering, and math (STEM) courses for Hispanic, low-income, or first-generation students.

CSC² collaborates with Chico State’s colleges of Engineering, Computer Science, and Construction Management (ECC), Natural Sciences, and Agriculture. Services include:

- Academic assistance and advising
- Navigating financial aid services and scholarship applications
- Professional development and career awareness
- Undergraduate research opportunities

https://www.csuchico.edu/stemconnections/
OVER THE LAST 10.5 YEARS

- Samuel Allen (S09 through end of S11, including summer 09) PhD University of Washington
- Timothy Shelton (S09 through end of S10, including summer 09) PhD UCD
- Frank Eberle, F10-S11
- Erin Knight, F10
- C Kyle Almlie (S11, summer 11, F11)
- Adam Taylor (summer 11)
- Elizabeth O’Neill, Chico High student (summer 12)
- Joseph Wise (summer 12)
- Katie Blacksmith (F12 and S13)
- Genessee Carini (summer 12 and S13)
- Rachele Murphy (S13)
- Jeanette Bertron (S13)
- Nicole Irias (S13)
OVER THE LAST 10.5 YEARS

- Kathryn Isganitis (F13)
- Chelsea Carman (F13)
- Reta Betar (S14, summer 14, F14)
- Diane Eilerts (S14)
- Blake Bewley (summer 14, F14, S15, F15)  
  MS Boston U, med school
- Hanne Henriksen, Pleasant Valley High student (summer 14)
- Annette Valceschini (S15 through F16 [including summer 15])
- Ashley Law (S15, summer 15)  
  MS San Francisco State
- Linda Lee (summer 15, F15, S16, F16)  
  CLS through SJSU
- Sara Koski (S16, F16)  
  med school
- Joshua Crane (F16, S17)  
  Army Corps of Engineers ERDC
- Meghan Riddell* (summer 17)
- Jordan Pitman, Pleasant Valley High student (summer 17)
- Kelly Burns (summer 17, F17)
- Eric Fleischman (F17)  
  * CSC² student
- Robin Bumbaugh* (S18, summer 18, F18, S19)
- Shannon Price (S18, summer 18)
- German Ramirez Torres* (summer 18, S19)  
  * CSC² student
CONTINUITY

- consistent CSRI offering
- consistent faculty
- CSRI lab coats
WHAT HAVE THEY DONE?

Goals:

- transform glycerol byproduct into a useable, value-added product
- use this value-added product in our teaching labs at Chico State
- work collaboratively with engineers, economists, and local industries
BUT REALLY, CHEMISTRY IS FUN
STUDENT SUCCESSES

- Two papers in peer-reviewed journals with undergraduate and high school co-authors
- Over $100k in funded grants (primarily through EPA P3 program)
- Travel to Washington DC!
- Countless poster presentations
- Student travel to conferences
RESEARCH OUTSIDE THE CLASSROOM

- established structure for course credit, summer research
- inclusive, welcoming faculty
- great faculty retention and cohesion
- collaboration with other departments and colleges
- support from the college

CSRI, 2018 edition
Discussion

- More and different models: How have you engaged undergraduate research in your courses? In support of your own research?

- What structures or programs would empower you do more or better undergraduate research with your students?
References


