Assessing whether CUREs meet research and pedagogical goals

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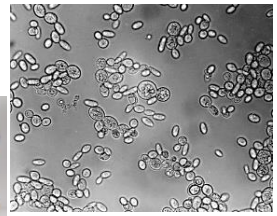
Course-based undergraduate research experiences (CUREs): Research embedded in a lab course



Research is the defining feature of a CURE:
Producing novel findings that are broadly relevant to people outside the classroom

Backward design approach

What are my goals for the CURE?

Wiggins and McTighe 1998

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Perspectives

Define Your Goals Before You Design a CURE: A Call to Use Backward Design in Planning Course-Based Undergraduate Research Experiences

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What are my goals for the CURE?

Pedagogical goals

What do you want students to know and be able to do?

By choosing to teach a CURE, instructors have already defined the overarching learning goal for students:
To provide them with the experience of **conducting scientific research**

Research: produce novel, broadly relevant findings

Research goals

What are your scientific discovery milestones?

Cooper, Soneral, Brownell 2017

Pedagogical goals

What do you want students to know and be able to do?

Engage students in research

Technical skills

Conceptual knowledge
(e.g. what is PCR, what is research)

Process skills
(e.g. design an experiment, analyze data, communicate results)

Psychosocial gains
(e.g. increase sense of belonging in science)

Research goals

What are your scientific discovery milestones?

What is the scientific research question?

Produce data that lead to publication

Produce data that inform local decision making

Collect pilot data for a grant or future project

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Which goals are most important? What is the hierarchy of goals?

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Cooper, Soneral, Brownell 2017

How do you choose which assessment strategy to use?

- Is there alignment with goals?
  - Does your assessment actually measure that goal?
- How good is the assessment?
  - Has someone else used it? Has there been any validation? Are you using it in the way that it was intended to be used?
- Is it feasible to use?
  - Do you have the time/expertise to collect and analyze the data?

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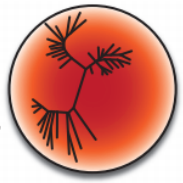

How to Assess Your CURE: A Practical Guide for Instructors of Course-Based Undergraduate Research Experiences †

Erin E. Shortlidge* and Sara E. Brownell
School of Life Sciences, Arizona State University, Tempe AZ 85201

- Organized a list of “off the shelf” assessments that you could use to assess your CURE that focus on student gains
- But if these assessments don’t align with your goals, then don’t use them

One size does not fit all for assessment

- We are beginning to move away from fishing for CURE outcomes to more purposefully designing CUREs to meet specific outcomes and setting out to measure those outcomes

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How do I design the activities in the CURE to meet my goals?

- What aspects of a CURE lead to achieving goals?
  - We need more reductionist research to identify what features of a CURE can lead to outcomes
  - Need more backward designed studies!

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