Abstract

Course-based Undergraduate Research Experiences (CUREs) are an effective way to expose large numbers of students to authentic research. Despite the benefits of CUREs, most laboratory courses still use traditional lecture methods. Research has shown many barriers exist that prevent instructors from using CUREs, including the perceived complexity, cost, and time required. We undertook a qualitative study of new PARE instructors, framed in diffusion of innovations (DOI) theory, to understand the adoption of CUREs. Our research aimed to uncover why, despite the benefits of CUREs, instructors were not implementing them. In this study, we explored perceived barriers to implementation and how these challenges can be mitigated to allow CUREs to reach more students.

Background and Rationale

• How do we get more instructors to use CUREs?
• Understanding barriers = design better CUREs, increase amount of CURE adoption

Little is known about how CUREs are perceived by instructors who are new to CUREs

Using Course-compatible Modules to Overcome Barriers to Course-Based Research

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MODEL: THE PREVALENCE OF ANTIBIOTIC RESISTANCE IN THE ENVIRONMENT (PARE) PROJECT

QUALITATIVE STUDY METHODS

PARE is collaborating. Students from across the country have collected and tested soil samples for the PARE project. Student-generated data is collected through our global databases and used to search for trends in antibiotic resistance in our environment.

RESULTS

Formative survey results: PARE-interested instructors do not anticipate many challenges

Creating adaptable research experiences. The PARE module format allows instructors to pick and choose the classroom research experience according to their own needs and resources. Most PARE classes implement the PARE core module, and additional modules can be added as deemed. Many expansion modules were conceived of and co-developed by PARE instructors.

Interview Results: Major motivators for implementing PARE are:

• Potential for scientific impact
• Compatibility with course structure
• Compatibility with available resources

CONCLUSIONS AND FUTURE DIRECTIONS

• Instructors recognized the relative advantage of CUREs over traditional laboratory teaching methods.
• Instructors perceive CUREs to be complex, citing many perceived barriers to implementation.

The approach taken by the PARE project does seem to lower commonly reported barriers to implementation. Longitudinal tracking of instructors using different CUREs at a variety of institution types will provide further insight and will help to uncover which perceived barriers at community colleges differ those of colleagues at other institution types. Designing future CUREs based on diffusion theory and known barriers to implementation may increase the rate of adoption at community colleges and bring CUREs to more students. 

Interview: PARE is perceived as less complex than other CURES

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<tr>
<th>Challenge</th>
<th>PARE</th>
<th>Other CURES</th>
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<tbody>
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<td>Time in the laboratory classroom</td>
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<td>Challenge code</td>
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PARE has served as a catalyst for sustaining a culture of course-based research for implementing instructors and institutions