Faculty Experiences with and Perceptions of Research-based Instructional Strategies: Preliminary Interview Findings

Melissa H. Dancy, Johnson C. Smith University
Charles Henderson, Western Michigan University
Chandra Turpen, University of Colorado

“Understanding Instructor Practices and Attitudes Towards the Use of Research-Based Instructional Strategies In Introductory College Physics” NSF-CCLI, 2008-2110 DUE-0715698
Abstract

During the fall of 2009, we conducted interviews with over 70 physics faculty across the United States. Interviewees were from a group of over 700 faculty who had previously answered an online survey. Interviewees were selected to represent a range of institution types (2 year colleges, bachelor degree granting institutions, and graduate degree granting institutions) and reported knowledge and use of research based-instructional strategies. Questions focused on their experiences with research-based instructional strategies. We report preliminary findings from these interviews.
How can we increase the impact of Physics Education Research?
Previous Work

- **Pilot Work**
  - Interviews of five physics faculty.
- **Fall 2008 Web-Based Survey**
  - Representative sample of 722 physics faculty across USA.
Most faculty (87%) report knowledge of at least one research-based product.
Many faculty (48%) report using a research-based product.
Faculty modify research-based products during implementation.
Situational barriers are significant.
Faculty report “time” as the most common change deterrent.
Current Project: Interviews

- Fall 2009 Interviews
  - Follow up interviews conducted with 72 survey participants.
  - Equally distributed among
    - two-year institutions
    - four-year institutions
    - graduate institutions.

<table>
<thead>
<tr>
<th></th>
<th>User</th>
<th>Former User</th>
<th>Knowledgeable Non-User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Instruction</td>
<td>N=12</td>
<td>N=12</td>
<td>N=12</td>
</tr>
<tr>
<td>Workshop Physics</td>
<td>N=12</td>
<td>N=12</td>
<td>N=12</td>
</tr>
</tbody>
</table>
Initial Impressions

- **Good News!**
- **Faculty are ripe for research-based innovations.** They...
  - Believe students need to be actively engaged to learn.
  - Believe the traditional approach is ineffective.
  - See value in research-based approaches.
  - Care about teaching and put a lot of time into it.
Initial Impressions

- Faculty over report levels of knowledge and use.
  - Ideas often vague/general
- High level of modification.
  - Due to infrastructure constraints, lack of pedagogical knowledge, disbelief in method locally, etc.
  - Unsuccessful implementation leads to abandonment
Initial Impressions

- Teaching evaluation not based on student learning.
  - Student ratings of teaching and peer observations common.
  - Faculty lack feedback.
  - Institutional reward/support structure not supportive of research-based change.
Departments and institutions “supportive” of innovation.
• Support is generally in the form of “not getting in the way”.
Social connections are important.

- Attended New Faculty Workshop, Two-Year College Workshop
- Colleague used technique
- Attended a graduate school with a strong PER program
Initial Impressions

Reasons for not using more research-based techniques

- Environmental conditions not supportive
- Lack of time to learn about, reflect on, and implement change
- Concern about declines in student ratings of teaching
- Disbelief in research-based innovations.
- Not enough time in class
- External expectations of how class is run.
Conclusions

- Standard dissemination is effective at
  - Increasing dissatisfaction with traditional approach.
  - Increasing awareness of research-based approaches
- Ineffective at large-scale, meaningful and sustained change.

Better Model?
- Beyond the Individual
- Policy and Cultural
  - Departmental, Institutional, and National