Detecting Shifts in Classroom Instruction After Online Professional Development

David Eddy Spicer
Roland B. Stark
Deryl K. Hatch

WIDE World
Online and On-site Professional Development
Harvard Graduate School of Education

American Educational Research Association
11 April 2006
WIDE World

Online courses for practicing teachers

– Promote constructivist-oriented shifts in lesson design, instruction, and assessment

– Applied across disciplines

– Internationally and at a large scale
WIDE World

- Teaching for Understanding
  - generative topics
  - understanding goals
  - performances of understanding
  - ongoing assessment
Problem

- Self-report data – inexpensive but seldom enough
- More intensive efforts – costly and slow
- Need indicators that
  - reveal general pedagogical change, and
  - can be applied at scale
Research Questions

• After WIDE World courses, what kinds of instructional changes happen that we have yet to quantify?

• What are our prospects for quantifying them?
Initial Survey Measures

• Constructivist practices scale (k=11)
  Have students…
  • explain reasoning
  • find multiple solutions
  • develop criteria

• Traditional practices scale (k=5)
  Have students…
  • listen to teacher lecture
  • recite facts
Alternative measures via surveys

• Measuring use of practices
  – Reliability and construct validity good
    (as in NCTM)
  – “Bedrock” validity—terrible
    (unlike NCTM)

• Measuring plans to use (surprising!)
  – good reliability
  – good construct, concurrent, and discriminant validity
### Survey Results

**Instructional activities: % with specific plans to increase**

<table>
<thead>
<tr>
<th>Constructivist: have students…</th>
<th>% Before course</th>
<th>% at Follow-up</th>
<th>% point diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find more than one way to solve a problem</td>
<td>19</td>
<td>55</td>
<td>+36</td>
</tr>
<tr>
<td>Explain their reasoning at length</td>
<td>17</td>
<td>45</td>
<td>+28</td>
</tr>
<tr>
<td>Help establish assessment criteria</td>
<td>24</td>
<td>47</td>
<td>+23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Traditional: have students…</th>
<th>% Before course</th>
<th>% at Follow-up</th>
<th>% point diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recite facts in front of class</td>
<td>10</td>
<td>16</td>
<td>+6</td>
</tr>
<tr>
<td>Attend to teacher's direct instruction</td>
<td>7</td>
<td>11</td>
<td>+4</td>
</tr>
<tr>
<td>Use worksheets or workbooks</td>
<td>9</td>
<td>10</td>
<td>+1</td>
</tr>
</tbody>
</table>
## Case study: Participants

9 teachers: 4 observed; 5 phone interviews

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>School</th>
<th>Grade</th>
<th>Subject Observed</th>
<th>Years Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courtney</td>
<td>Suburban Middle</td>
<td>8</td>
<td>Computer Literacy</td>
<td>5</td>
</tr>
<tr>
<td>Mercedes</td>
<td>Urban High</td>
<td>9-11</td>
<td>Portuguese (Level 1)</td>
<td>26</td>
</tr>
<tr>
<td>Louise</td>
<td>Urban Elementary (charter)</td>
<td>6</td>
<td>Biology</td>
<td>8</td>
</tr>
<tr>
<td>Hannah</td>
<td>Urban High</td>
<td>9</td>
<td>English Language Arts</td>
<td>12</td>
</tr>
</tbody>
</table>
Case study: Methods

- Multiple sources
  - Online course discussion
  - Follow-up survey comments
  - Interviews
  - Observations (4 teachers, 1-3 lessons each)
    - Ratings with pilot protocol
    - Fieldnotes

- Multiple techniques
  - Pattern development (Inductive and deductive coding)
  - Conceptual elaboration (Analytic memos)
  - Recontextualization (Profiles)
  - Comparison & synthesis across cases (Matrices)
Cross-case finding: Unit Topics

• For all 9: Teachers detailed improvements in developing unit topics to engage student interest.
• For all 4 observed teachers: Observations matched reports.

[The emphasis on character] is like one of the most successful things about this, this unit […] I feel like it really contributes to understanding because it creates empathy, and I don’t think that’s [necessarily] an obvious connection.

Hannah, 9th grade ELA teacher

*Lord of the Flies* Unit

(Post-observation interview, 20 Jan. 2006)
Cross-case finding: Assessment

- For 6 of 9: Teachers’ detailed a range of shifts in teacher- and student-directed assessment.
- For 3 of 4 observed teachers: Assessment as practiced did not mesh with reports.
  
  So, the cool thing [...] is they identified [the organs]. [...] You know [...] the liver’s here. And so they could see that.

  [Interviewer: How did you know?]
  By conversation with the groups.

  Louise, 6th Grade Biology
  Frog dissection unit
  (Post-observation interview, 25 Jan. 2006)
Implications for Shifts in Instruction

After WIDE World courses, what kinds of instructional changes happen that we have yet to quantify?

• Develop topic for student interest:
  – Already valued by teachers
  – Path from plan to enactment straightforward
  – Feedback from students direct

• Match assessment with goals and activities:
  – Challenging to understand
  – Path from plans to enactment complex
  – Feedback not necessarily direct
Implications for Measures

• What are our prospects for quantifying shifts in practice?
  – Simpler
    • rating open-ended responses
  – More complex
    • multiple types of evidence
    • collected at multiple times
Thank you!

David Eddy Spicer
david_eddy_spicer@gse.harvard.edu
Roland Stark
roland_stark@gse.harvard.edu

Paper & presentation available online:
wideworld.pz.harvard.edu/impact/research/presentations.cfm