Measuring the Impact of Teacher Professional Development

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Introduction

• Center for Education and Evaluation Service at UC Davis

• Experience with Professional Development Evaluation
  – California Math and Science Partnership (CaMSP)
  – Teaching American History (TAH)
  – Improving Teacher Quality (ITQ)
Teacher Professional Development
Theory of Change

- Professional Development
- Content Knowledge
- Pedagogy

- Teacher Change
- Instructional Practice

- Student Change
- Achievement
- Engagement
Logic Models

• What is a logic model?
  – A visual representation of the relationship between the goals of the program, the outputs, the expected outcomes, and the indicators that measure whether these outcomes are achieved.

• How do logic models inform evaluation?
**Definition:**
Broad goals of the professional development program

**Examples:**
- Teachers will improve content knowledge, pedagogy, and practice
- Students will improve achievement and engagement
Definition: Products of professional development activities

Examples:
• Number of schools participating
• Number of teachers who attend PD
• Number of hours of PD
• Number of students taught by participating teachers
• Materials developed (manuals, lesson plans, worksheets, assessments)

A product, NOT a change or impact
Definition:
Specific changes that result from the professional development

Examples:
• Teachers will improve mathematics content knowledge
• Students will improve math achievement
• Students will improve engagement in mathematics

Outcomes MUST be specific & measurable
### Outputs vs. Outcomes

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students taught by a PD teacher</td>
<td>Students show improvement in their academic achievement</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of teachers participating in PD</td>
<td>Teachers show improvement in their content knowledge</td>
</tr>
</tbody>
</table>
Definition:
Process or instruments for assessing whether or not the anticipated outcome occurred. When developing measures, data analysis should be considered.

Examples:
• Teacher content knowledge assessments
• Surveys
• Student assessments
• Observation
• Interviews

Measures should be TRIANGULATED
EXAMPLES OF MEASURES FOR EVALUATING OUTCOMES OF PD PROGRAMS
Teacher Content Knowledge Measures

• Top Tier
  – Nationally-normed content knowledge assessments (e.g., LMT)

• Second Tier
  – Researcher/program provider developed content knowledge assessment
  – Self-report of knowledge or learning
Pedagogy Measures

• Top Tier
  – Teacher observation
  – Including real world teaching situations and scenarios that relate to student thinking and learning

• Second Tier
  – Teacher self-report
Instructional Practice

• Top Tier
  – Observation

• Second Tier
  – Self report
  – Student report
Student Engagement Measures

• Top Tier
  – Observation

• Second Tier
  – Teacher report
  – Student report
  – Attendance
Student Achievement Measures

• Top Tier
  – Normed Assessments
    • e.g., CSTs, Benchmarks

• Second Tier
  – Researcher or program provider developed assessment

• Third Tier
  – Teacher report
  – Student report
Other Measurement Considerations

• Research design
  – Pre – Post
  – Comparison or control group
• Additional data sources
  – Principals
  – PD providers
  – Parents
  – Student class work
• Triangulation
LOGIC MODEL EXAMPLE

Logic model for a CEES evaluation of a CaMSP professional development program
Objectives

- Improve teachers’ content knowledge, pedagogical content knowledge, and practice
- Improve student achievement in mathematics

Outputs

- 25 teachers attend 75 hours of professional development
- Students taught by teachers who attended professional development

Outcomes

- Increased teacher content knowledge
- Improved instructional practice
- Increased pedagogical content knowledge
- Increased student math achievement
- Increased enrollment in advanced math courses

Measures

- LMT subscales
- Teacher survey
- Student Survey
- Review of student work samples
- Math CSTS
- Enrollment data
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QUESTIONS & ACTIVITY

Logic model templates to be filled out based on real or hypothetical programs
Instruments for assessing whether or not the outcome occurred

Specific changes that result from the PD

Products of professional development activities

Broad goals of the professional development program

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