Implementation and Intervention Fidelity in Professional Development for STEM Teaching Practices

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Evaluation 2014
Denver, Colorado
Intervention Fidelity
• Fidelity to the intervention model and its components
• Creates change in the environment
• Leads to the outcomes

Implementation Fidelity
• Activities that support intervention components
  – Funding
  – Professional development (PD)
  – Materials
  – Time
  – Leadership support

Hulleman & Cordray, 2009
Implementation Supports

Intervention Components

Outcomes
• In education, this works well
  – When the student-facing aspect of the intervention is well-defined and is the primary evaluand
  – Implementation aspects are not the focus
• But not so well when
  – The student-facing aspect is ill-defined
  – The PD is more intensive and is the primary evaluand
  – Big changes in general instructional practices are expected

Then thinking of the PD as just a support is insufficient
Examples

Pre-algebra supplemental program
• Focused on a set of materials
• Fixed, limited time per day
• Specific routine
• Daily teacher instructions, student tasks
• Focused set of topics

Formative assessment PD for math teachers
• Job-embedded sessions focusing on samples of student math work
• Helps teachers
  – Set and communicate learning goals and success criteria
  – Provide descriptive feedback on rich tasks
  – Support student self and peer assessment

PD about how to teach this thing
PD about how to teach this way
Student algebra readiness

Teacher/ student materials

Class time

Classroom routine

Teacher PD

Concrete, visual representations

Frequent exposure to pre-algebra concepts

Authentic contexts

Mathematical discussions

Student algebra readiness

Every Day Counts: Algebra Readiness
Learning Formative Assessment in Mathematics with the Assessment Work Sample Method (AWSM)
When PD is the primary evaluand

- Two sequential or overlapping models of implementation and intervention fidelity
- Teacher is the connection between the two
What’s STEM about all of this?

- Common Core mathematics and Next Generation Science Standards require changes to traditional STEM teaching practices
  - Need to understand student thinking
  - Need to convey content storyline or conceptual understanding
  - Need to help students support answers with evidence
What this means for evaluators

• We may be seeing more interventions requiring the sequential/overlapping design
• Plan evaluation with developers or PD delivery staff to choose appropriate model
Thanks!

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305A110392 to McREL. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.