

Learning From Practice: A Continuous Improvement Model for Teacher Preparation

Update of Delaware Work
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The University of Delaware Model

- Design a system that focuses on the gradual, cumulative, lasting improvement of teaching
 - Learning Goals for Faculty and Doctoral Students:
Competencies needed to systematically study and improve the teacher preparation program
 - Learning Goals for Elementary Pre-Service Teachers:
Competencies needed to systematically study and improve classroom teaching
- Take a long-term view: A 20-year horizon



Learning Goals for Faculty and Doctoral Students

- Research and teaching competencies needed to study and improve our pre-service program
 - _ Research skills directed toward understanding pre-service teachers' thinking and how their thinking changes in response to program interventions
 - _ Teaching skills directed toward using research-based information to revise courses (3 math content and 2 math methods) in a continuing cycle of design-test-revise.

Learning Goals for Pre-Service Teachers

- Mathematics knowledge for teaching
- Analysis-of-teaching skills
 1. Specify learning goals (*What are students supposed to learn?*)
 2. Evaluate evidence from students to determine if goals were achieved (*What did students learn?*)
 3. Form cause-effect hypotheses about how instruction facilitated learning (*How did teaching help students learn?*)
 4. Revise instruction to better help students achieve the learning goals (*How could teaching more effectively help students learn?*)

Note: Expertise in teaching shifts from classroom performance to lesson preparation and analysis

What Are We Learning About the Development of Analysis-of-Teaching Skills?

■ Initial Research Questions

- How do pre-service teachers gather and use evidence to support claims about teaching effectiveness? (Skills 2 and 3)
- Under what conditions do pre-service teachers display Skills 2 and 3?
- Is there a relationship between mathematical content knowledge and analysis-of-teaching skills?

Methods

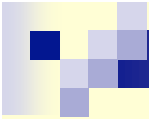
- Ask PSTs to analyze video lessons under different conditions
 - _ Tell PSTs lesson was not effective vs. neutral condition
 - _ Ask PSTs to plan to collect evidence vs. no planning
- Ask PSTs to analyze written transcripts of lessons
 - _ Transcripts reduce complexity
 - _ Transcripts can be written to control information presented for analysis
- Ask PSTs to analyze their own teaching
- Ask PSTs to complete specially designed content tests
- Plan interventions in courses and evaluate effects
- Some studies correlational; some studies randomized experimental design

How Do PSTs Gather and Use Evidence to Support Claims About Teaching Effectiveness?

- Often assume that students learn what the teacher says
- When student evidence is used, it often:
 - _ Is not relevant for the learning goals
 - _ Does not align with the claims that are made (e.g., procedural skill implies understanding)
 - _ Focuses on correct responses and ignores other information
- Context plays a significant role

Under What Conditions Do PSTs Display Skills of Collecting and Evaluating Evidence of Students' Learning?

- When PSTs are told the lesson is problematic
- When PSTs plan to collect revealing evidence before watching the lesson
- When course interventions direct PSTs' attention to problems with their analyses
- When PSTs analyze their own teaching vs. that of others



Is There a Relationship Between Mathematical Content Knowledge and Analysis-Of-Teaching Skills?

- Initial studies suggest content knowledge alone is insufficient for determining pre-service teachers' abilities to analyze evidence of student learning.
- This finding indicates that relationships, if they exist, will be uncovered only with increasingly refined measures.

What Are We Preparing to Learn About This Year?

- What relationships exist between content knowledge and analysis-of-teaching skills?
- How do PSTs evaluate the effectiveness of their own teaching?
- What kinds of analysis-of-teaching skills are possessed by expert practicing teachers?
- What kinds of course interventions help PSTs develop analysis-of-teaching skills?
- How do doctoral students develop skills to study and improve practice?

Summary

- Just as we expect pre-service teachers to continue learning from their practice when they teach, so we expect to continue learning from our practice as we prepare teachers
- Based on effects of special interventions, we believe it is possible to design an increasingly effective pre-service program IF we continue to feed systematically collected data on effectiveness back into program design.

Mathematics Education Faculty and Doctoral Fellows at the University of Delaware

Faculty

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- Laura Glass
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- Sarah Loyer
- Christine Phelps
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