The “Wicked Problem” of Linking Teacher Preparation, Teaching Practice, and Student Learning

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• Our profession’s inability to establish links between teacher education and student learning has soured relationships with policy makers and the scientific community (Sindelar, Washburn-Moses, Thomas, & Leko, 2014).

• “The effect of teacher preparation on eventual student outcomes is necessarily mediated by teachers’ actual practice. It is, therefore, impossible to know the effect of teacher preparation on student outcomes without fully understanding teaching practice” (Goe & Coggshall, 2007).
Purposes

• Describe a “wicked problem” confronting teacher education.

• Share 3 ways to connect preparation, practice, and student learning
  • Created & sustained collaborative relationships with P-12 partners
  • Taught pre-service teachers to use Evidence-Based Practices (EBP) & assess effects on student learning

• Provide evidence on what worked
  • How student learning was impacted
  • How teacher practice was impacted
  • How teacher preparation – teaching practice – student outcomes were linked
Wicked problems (Rittel & Webber, 1973) have...**

- **COMPLEXITY:** high level of complexity and inherent “trickiness” of the problem

- **INTERDEPENDENCIES:** the effort to solve one aspect of a wicked problem may reveal or create other problems

- **STAKEHOLDERS:** multiple stakeholders with radically different understandings of the problem ... what one side finds satisfactory the other finds **abhorrent**

- **SOLUTIONS:** there are no good or bad solutions, just better or worse ways to proceed
“Linking Teacher Education, Teacher Practice, and Student Learning”

Why is this a “wicked problem”?

1. **COMPLEXITY**: Ill-defined “independent” and “dependent” variables across programs, candidates, P-12 schools, and students; impedes ability to measure, conduct research, & build empirically supported professional knowledge and practice base.

2. **INTERDEPENDENCE**: There are countless variables, individual, classroom, school, and community that are in constant and sometimes competing play with each other.

3. **STAKEHOLDERS**: The education landscape of stakeholders (i.e., students, parents, teachers, school leaders, school boards, private sector, & policy-makers) with different, interests, goals, and supports are complex and ever changing.

4. **SOLUTIONS**: “Culture” change is long-term and very messy.
The “Stakes”**
Standards
Curriculum
Outcomes
Pedagogy
Teacher Development
Teacher Evaluation
Student Evaluation
Resources Allocation

Implementation
Exploration
Adoption
Initial Implementation
Full Implementation

The “Stakeholders”
students
parents
teachers
principals
Teacher educators
politicians

The “Landscape”
classrooms
schools
districts
government
private organizations
universities
Some Basic Assumptions

• It is impossible to know the effects of teacher preparation on student outcomes without better understanding of teaching practice.

• It’s not possible to understand teaching practice without directly observing it or its immediate and ongoing effects on student learning.

• Teacher practice and student learning are legitimate but under-represented areas of research in teacher education.

• If Teacher Education is to remain viable it must help school improve student outcomes
Instructional Assistants Program

• First formal teaching experience
• Freshmen & Sophomores
• **8- to 10-week field experience & partnership with P-12 schools**
  • Pre-service teachers assigned in pairs
  • Twice per week; 3 hours per day
  • **Teaching/Learning Contracts**
    • 3 to 5 routine instructional roles
    • Progress was monitored 2-3 times per semester
• Taught two **formal lessons**
  • Pre- & post-test lessons
  • Graphed results for whole class, small groups, and/or one target student
  • Used EBP in one lesson as intended
Descriptive Study (Maheady, Jabot, Rey, & Michielli-Pendl, 2007)

• Instructional Assistants Program
  • 422 pre-service general educators over 4 semesters
  • Almost 17,000 hours of in class assistance (15 years)
    • 78% in high need schools
  • Taught over 800 formal lessons
  • Implemented variety of EBP with high degree of accuracy
    • Students made marginal and noticeable gains in 83% of sampled lessons
    • Students and teachers provided positive evaluations of program and EBP

• Lessons Learned
  • Pre-service teachers can use “simple” EBP as intended & help students
  • In-service teachers used IA primarily for instructional purposes
  • School-university partnership has persisted for almost 20 years
Peer Tutoring Program

• Second clinical experience
  • Sophomores & Juniors
  • Linked to Introduction to Special Education course
  • 8- to 10-week, after-school tutoring program for students with disabilities and ELL
• 2:1 instructional arrangement
  • Pre-service teachers alternated teaching, observing, and data collecting roles
  • Collected data on how well they used selected teaching practices
  • Monitored student performance on brief, end-of-session assessments
• Worked in small cooperative learning groups on campus
  • Shared EBP using Jigsaw format
  • Modeled content enhancements & use of varied motivation systems
Peer Coaching Study (Mallette, Maheady, & Harper, 1999)

- Randomly selected 3 tutor pairs
- Taught them to use adapted version of PALS (multi-component training, “peer tutoring” package)
- Examined effects of coaching on
  - How well students coached
  - How well pre-service teachers used PALS
  - What happened to students’ reading fluency and comprehension
- Lessons Learned
  - Pre-service teachers learned to peer coach but not well
  - Coaching improved accuracy in using PALS
  - Improved accuracy produced better student outcomes
  - Teachers and students gave positive favorability ratings
  - Pair Tutoring Program sustained for 24 years
• **Reciprocal Peer Coaching Study**
  • What effects will reciprocal peer coaching have on candidates’ ability to use PALS accurately?
  • What impact will PALS have on pupils’ reading fluency and comprehension?

• **Participants and Settings**
  • Three pairs of GE candidates recruited from EDU 250
  • Three, 3rd grade students with learning disabilities

• **General Procedures and design**
  • Candidates were taught to use *adapted* PALS procedures
  • They implemented PALS before and after training in peer coaching (multiple baseline design)
  • Monitored impact of reciprocal peer coaching on fidelity of PALS use and pupils’ reading fluency & comprehension
Graduate Research Sequence

• 9-hour TE research sequence required for all GE teachers
• Second course, teachers……
  • Identify important problems of practice
  • Complete illustrative literature reviews
  • Design research-to-practice studies & get approval to do them
• Research-to-practice studies
  • Target important problems in P-12 settings
  • Conduct study under “existing” conditions
  • Compare student performance under existing (baseline) versus intervention conditions
    • Within-teacher comparisons
Improving Homework Completion & Accuracy
(Landy, Budin, Maheady, Patti, & Rafferty, in press)

• Problem
  • Low homework completion and accuracy
  • Pupil disinterest and some disruptive behavior

• Students and settings
  • 20, 7th graders; 12 students with IEPs
  • Co-taught math inclusion class (19 & 34 years experience)

• Student Outcomes
  • Percent homework completed (i.e., % of items completed divided by total assigned)
  • Percent homework accuracy (i.e., % correct or completed items)

• Teaching Practice
  • Three Jars
Three Jars

• Step 1 Students turn in homework **before** bell rings.

• Step 2 Teacher selects paper slip from Jar 1.
  • determines target **behavior** (completion and/or accuracy) & **criteria** 80% to 100% (e.g., Accuracy = 85%)

• Step 3 Teacher selects slip from Jar 2.
  • determines target **student(s)** (i.e., student, row, or whole class)

• Step 4 Teacher evaluates student(s) performance **privately**
  • criteria met, slip selected from Jar 3; rewards shared by class
  • criteria not met, class encouraged to try harder
11 paper slips
5 “completion”
5 “accuracy”
1 “both”
criteria 80% to 100%

26 paper slips
1 “whole class”
5 “rows 1 to 5”
20 pupil names

20 paper slips
15 (material, activity, & novel rewards)
5 (mystery motivator slips)
M = .64 C
M = .59 A

M = .95 Completion
M = .86 Accuracy

M = .65 C
M = .64 A

M = .95 Completion
M = .86 Accuracy
Closing The Gap

**Percent Completion**

- Students without IEPs
- Students with IEPs

**Percent Correct**

- Students without IEPs
- Students with IEPs
Takeaways

• We cannot solve the wicked problem confronting our profession
  • We can respond constructively; keep nibbling

• Teacher educators can
  • Identify create or adapt clinical experiences with P-12 leaders and teachers
  • Teach pre-service to use practices that improve student outcomes & give “tools” to measure integrity & impact (i.e., High Leverage Practices)
  • Conduct studies on teacher practice & student learning

• SEA professionals
  • Promote and implement policies that support use of EBP
  • Encourage use of “enlightened PD” to help teachers use them (e.g., coaching models)
  • Support accountability policies and procedures that focus on student and teacher improvement over evaluation.
References


• ** Content adapted from Keyworth, Detrich, & States (2014). Adopting evidence-based practices in education: Bridging the culture gaps. Ninth Annual Summit on Evidence-Based Practice, Wing Institute, Berkeley, CA.**
Assessing the Preparation-to-Practice link

• How does one establish the effect of preparation on practice?
  • One major impediment is that pre-service candidates are not “tracked” much beyond their initial school placements
  • Another potential barrier is that preparation programs do not always collaborate with districts on matters of curriculum & practice
  • The most potentially constructive way to proceed might be derived from new teacher induction programs
  • One must also use research designs that allow one to establish functional relationships.*

• We need more and better research on the outcomes of teacher education that uncouples the impact of preparation from that of teachers’ entering characteristics