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Vehicles on the Road to Reform

Julie Thomas

University of Nebraska-Lincoln, julie.thomas@unl.edu

Sandra B. Cooper

Baylor University, sandra_cooper@baylor.edu

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Abstract for DBER Group Discussion on 2015-01-29

Presenter(s), Department(s):

Julie Thomas
Research Professor
Department of Teaching, Learning, and Teacher Education
College of Education and Human Sciences
University of Nebraska-Lincoln

Title:

Road to Reform

Abstract:

Though elementary teacher educators introduce new, reform-based strategies in science and mathematics methods courses, researchers wondered how novices negotiate reform strategies once they enter the elementary school culture. Given that the extent of parents' and veteran teachers' influence on novice teachers is largely unknown, this grounded theory study explored parents' and teachers' expectations of children's optimal science and mathematics learning in the current era of reform. Data consisted of semi-structured, open-ended interviews with novice teachers (n=20), veteran teachers (n=9), and parents (n=28). Researchers followed three stages of coding procedures to develop a logic model connecting participants' discrete designations of the landscape, regulating phenomena, contextual orientation, and desired outcomes. This logic model helped researchers develop propositions for future research on the interactive nature of parents' and teachers' influential role in elementary science and mathematics education. Implications encourage science and mathematics teacher educators – as well as school administrators – to explicitly develop and support novice teachers' ability to initiate and sustain parent/family engagement in order to create a school climate where teachers and parents are synergistically motivated to change.

Vehicles on the Road to Reform



JULIE THOMAS – UNIVERSITY OF NEBRASKA
SANDRA B. COOPER – BAYLOR UNIVERSITY



Problem



- Our students – push-back to hands-on methods we were encouraging them to employ.
- Schools – testing mandates -> solidify traditional strategies (Welner & Carter, 2013).
- Teachers – reluctant to adopt reform strategies (Berkovich, 2011; Smith & Southerland, 2007).
- Parents – wonder how and why schools have changed (Saracho & Spodek, 2009).

Grounded Theory Focus



In this research, we aimed to fully explore the critical influence of parents' and teachers' knowledge and expectations of elementary science and mathematics learning:

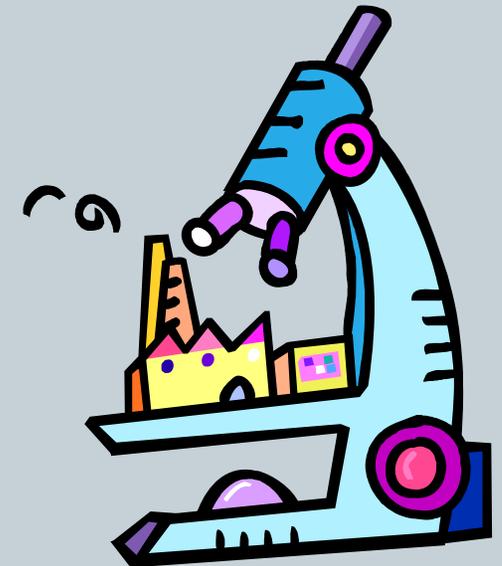
- What are children doing in science and mathematics classes?
- What learning is important or valued?
- How well are children doing in today's classrooms?
- Reciprocal steps of data collection, comparison of data, emerging categories, and theoretical sampling to determine similarities and differences across parent and teacher responses.

Semi-Structured Interview Data



We expected thoughtful, experiential data would help us derive theoretical propositions about parents' and teachers' managed expectations of students' science and mathematics learning in this reform era, grounded in the views of these study participants.

- Parent Interviews (n=28)
- Veteran Teacher Interviews (n=9)
- Novice Teacher Interviews (n=20)



Verification



Followed Miles and Huberman's (1994) multiple procedures to verify our data analysis.

- Recognizing our likely bias as preservice teacher educators (*objectivity*), we held frequent meetings to insure high inter-rater consistency among the researchers and graduate research assistants over time (*dependability*).
- We two researchers continued data analysis and discussions to refine the coding (*authenticity*) and to define the categories of causal conditions and strategies for navigating reform, the broader context and roles of participants' reform management strategies, and the propositions for future testing (*applicability*).

Protocols



- **Open-Coding** –organize discrete ideas into categories of causal conditions and strategies for navigating reform-based teaching and learning practices in K-6 science and mathematics classrooms (four strategies).
- **Selective-Coding** – organize narratives to reflect broader context and illuminate discrete designations of power and influence.
- **Axial-Coding** – develop a logic model to connect participants' discrete designations of the landscape, regulating phenomena, contextual orientation, and desired outcomes (->propositions for future studies)

1. Typology of Navigation Strategies



School Bus



Tour Bus



Classic Car



Jeep



Buses



• Tour Bus Travelers

- Comfortable ride.
- Padded, reclining seats with arm and foot rests.
- Large viewing window, good suspension, and air-conditioning.
- Compliant riders notice change but appreciate the order and routine.
- Nod to the driver and note the upside of changes.

• School Bus Travelers

- Uncomfortable ride.
- Bench seats without arm or foot rests.
- No air-conditioning, doors open frequently.
- Frustrated travelers not so contented.
- Notice change but generally criticize the drive and the ride.

Cars



- **Jeep Travelers**

- Similar to school bus travelers.
- Drive their own vehicle.
- Uncomfortable, but they can go off road.
- Criticize reformed teaching and learning.
- Find ways to alter the journey (address their concerns).

- **Classic Car Travelers**

- Similar to jeep travelers.
- Drive their own vehicle.
- Do not expect a comfortable ride.
- Nostalgic about science/math learning in the good old days.
- Likely to choose an alternate route.

2. Roles and Contextual Factors



- Educational Attainment
- School Learning Experience
- Socio-Economic Status
- Child Skill Level



Novice Teachers



	Educational Attainment	Personal School-Learning Experience	Socio-Economic Status (SES)	Children's Grade/Skill Level
Novice Teachers	<p>Average experience = 1.65 years</p> <p>Bachelor's degree in education or Master's degree in education.</p> <p>Master's level teachers (recent graduates) come from broad backgrounds (i.e. child development, geology and business).</p>	<p>Remember doing science (hands-on experiments) in elementary school.</p> <p>Closely follow mandated curricula "because we don't know any different."</p> <p>Refer to reform ideas and strategies (methods course learning) and note mentor teachers as role models.</p>	<p>Expect teachers can get students excited but parents are responsible for nourishing their children's interests.</p> <p>Believe low SES parents have little time and don't show up for open house.</p>	<p>K-3 teachers are especially concerned about reading and math skills.</p> <p>4-6th grade teachers worry students are too stressed about "the test."</p>

Veteran Teachers



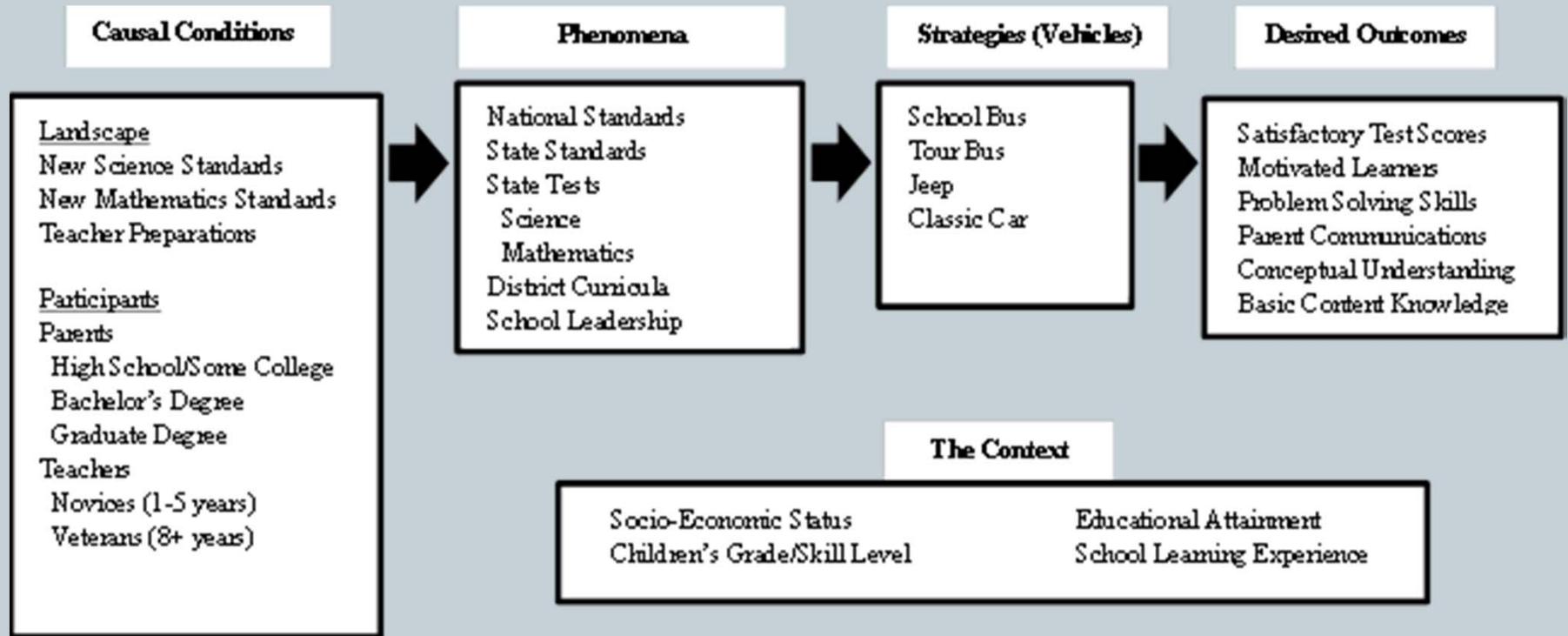
	Educational Attainment	Personal School-Learning Experience	Socio-Economic Status (SES)	Children's Grade/Skill Level
Veteran Teachers	<p>Average years of teaching = 21</p> <p>Advanced certifications and leadership trainings.</p> <p>Recognized Board Certified, award winning teachers.</p>	<p>Remember rote, text-book learning, desks in rows, and not much science.</p> <p>Easily able to find a balance between test-preparation curricula and constructivist, problem solving instruction.</p>	<p>Recognize low-SES parents could exert more influence than they realize: "these kids need more than tested skills."</p> <p>Established parent communications; easier when one is older than the children's parents.</p> <p>Note high SES parents often visit the classroom.</p>	<p>Determine what needs to be done for the state test. Make it relevant so kids are engaged and learning.</p> <p>Focus more on problem solving and less time re-teaching tested skills.</p>

Parents



	Educational Attainment	Personal School-Learning Experience	Socio-Economic Status (SES)	Children's Grade/Skill Level
Parents	<p>Advanced Degrees (N=6)</p> <p>Bachelor Degrees (N=6)</p> <p>High School/Some College (N=16)</p>	<p>Remember they sat and listened to the teacher.</p> <p>Note today's students learn in more ways.</p> <p>Parents of special education students particularly worry that achievement is measured by state tests.</p>	<p>Less educated parents observe the school program is set: "not much parents can do."</p> <p>More educated parents bemoan the schools' focus on state test scores.</p> <p>Note high SES parents expect homework.</p>	<p>Parents of special-needs-students are frustrated by testing, limited school services.</p> <p>Overall, parents express the importance of real-world learning connections.</p>

3. Model of Parents' and Teachers' Influential Role in Science and Mathematics Reform



1.0. Context Matters



- 1.1. The younger the child and the less-experienced the teacher, the more likely the parent or teacher chooses the Tour Bus strategy.
- **1.2. The older the child and the less-experienced the teacher, the more likely the parent or teacher chooses the School Bus strategy.**
- **1.3. The more educated the parent or the teacher, the more likely the parent or novice chooses the Classic Car or Jeep strategy.**
- **1.4. Parents of special-needs students, challenged by mandated state tests and the resulting test-focused curricula, are most likely to choose the Jeep strategy.**

2.0. Teacher Experience Matters



- **2.1. The more experienced the teacher, the more hesitant they are to categorically adopt new test-focused teaching methods.**
- **2.2. The less experienced the teacher, the more likely they are to readily adopt district-mandated science and mathematics curricula and strategies.**
- **2.3. Novice teachers are powerfully influenced by mentor teachers' negotiations of power with school leaders, parent communications, and instructional decisions.**

Implications



- Teachers and administrators have had considerable access to resources to help them understand new-reform teaching practices, parents have been left out of the loop.
- This may not have been an intentional decision, but it is representative of the discrete designations of power and influence on K-6 science and mathematics teaching.



School Administrators



- Critical role in helping teachers assume a proactive stance with parents and families.
- Help teachers balance (1) the pressures of mandated tests with (2) the importance of family engagement (Baum and Swick, 2008) as two critical components of the educational process.
- Help novice teachers connect academic standards with the community health care supports children need to meet them (Berry, 2013).



Teacher Educators



- **Methods courses – productive communication skills focused on real-life application (Baum & Swick, 2008).**
- **Prolonged study of one parent/family (Swick, 2006) or internships in community organizations (Berry, 2013).**
- **Clinical field experiences – model ways to initiate and sustain parent-teacher partnerships (Sumison, 1999).**
- **Clinical field placements – allow opportunity for meaningful involvement with families (Chavkin, 2005).**

