Educational Policy, School Administration, and the Technical Core

The Local Infrastructure and Instructional Improvement Challenge

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The Distributed Leadership Studies: [http://www.distributedleadership.org](http://www.distributedleadership.org)
Funded by the National Science Foundation, Spencer Foundation, Institute for Education Sciences, Carnegie Foundation
Focus on *Practice*

- Instructional improvement depends on improving the practice of leading and managing.
- Practice is generated in the interactions among school staff; attention to interactions, not just actions, is necessary.
- Practice is in great part about structure and infrastructure, embedded in the formal and informal aspects of the organization.

Why Interactions Matter

- Social relations can be a source of resources, including trust, expertise, opportunities for joint sense-making, and incentives for innovation
- On-the-job interactions are associated with the transfer of advice and information – essential for professional learning and the development of new knowledge
- The formal organizational structure can enable and constrain interactions among organizational members

Blau, 1957; Bryk & Schneider, 2002; Coburn, 2001; Daly & Finnigan, 2010; Elmore, 1996; Eraut & Hirsh, 2007; Frank, Zhao, & Borman, 2004; Hill, 2004; Little, 2002; Smylie, 1995; Spillane, 2004
Understanding Practice

We have tried to understand the practice of leading and managing by:

- Developing research instruments to capture social interactions
- Describing practice through empirical investigations
- Working with districts and schools to facilitate reflection on and diagnosis of practice

It is not simply what people “do” that matters, but how they do so “together” (Becker, 1986)
Elementary Mathematics Advice Network
NebraskaMATH Study

- Elementary and middle schools in Nebraska
  - 2007 and 2008: 10 middle schools in one district
  - 2010 through 2013: 82 K-6 schools in four districts
- University-district partnership
  - Professional development in mathematics for selected teachers, leading to a mathematics specialist certificate
- Survey and interview data
  - School Staff Questionnaire (SSQ)
  - Follow-up interviews with staff from five elementary schools in one district
Social Network Instrument

Screen Shot from SSQ – Math Advice Questions Page 1

School Staff Survey

During THIS SCHOOL YEAR, to whom have you turned for advice or information about teaching Mathematics? Please write full first and last names, and give a brief description of that person's role or position. You do not need to fill all the spaces.

- [ ] I have not sought advice from anyone.

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Spillane</td>
<td>principal</td>
</tr>
<tr>
<td>James Pustejovsky</td>
<td>6th grade teacher</td>
</tr>
<tr>
<td>Virginia Pitts</td>
<td>math coordinator</td>
</tr>
<tr>
<td>Cindy Sigal</td>
<td>roommate - also a teacher</td>
</tr>
</tbody>
</table>
Leadership

- Formal leaders are more likely to provide advice or information.
- Part-time leaders are more likely to provide advice than full-time leaders and are often brokers between subgroups of teachers.

Expertise

- Teachers are more likely to receive advice about a subject from teachers who reported more PD hours in that subject.
- Teachers who reported more PD hours in a subject are more likely to receive information in that subject.

Math Coach Facilitates Interactions
Formal Position Important for Advice Seeking

“[Emily] really wasn’t our facilitator [last year], though she was my co-worker, just a third grade teacher. I knew she had a wealth of knowledge, I just wasn’t in [her classroom] when she was teaching math. But, now that she’s moved into this math facilitator position, that’s different…She’s been trained in it. And, she’s gone to school for it and she’s a great coach. She knows a lot about math and I trust her that she has a lot of, a wealth of knowledge… She’s the go-to person.”

– Angie, Special education
Training Also Serves as a Marker of Expertise

Paula: Why would you say you talk to John (the university mathematics PD participant)?

Karen (1st grade): Because he’s a second grade teacher….He’s kind of become the math person to see because he’s taken this extra training that nobody else in the building has done, and I know that he’s interested in math so, he’s just one that I’ve gone to that I know focuses very heavily on, I like his beliefs and the way that he has his room set up and the way that he carries himself.
Formal Organizational Structure and Advice and Information Seeking Behavior

- Formal structures and routines
  - Teachers in the same grade are more likely to receive or provide information
  - School leaders design organizational routines to change the interactions among staff with respect to who talks to whom about what

- Subject matter
  - Advice and information ties vary depending on the school subject (mathematics versus English language arts)

Spillane, Kim, & Frank. (under review); Spillane, Parise, & Sherer (2010).
Professional Learning Communities Support Mathematics Infrastructure
Using Routines to Lead and Manage for Math Instruction

“My strategy is to make sure I have so-called pockets of leadership throughout the building to assist with [math instructional issues]. It is kind of a puzzle or a chess game, a strategy for arranging people a certain way. When teachers are sitting in their PLC [Professional Learning Community] meetings I don’t want them going, ‘Well, we don’t know how to handle this math issue because so-and-so is not here,’ you know, you worry that you’re gonna have a PLC meeting that’s so dependent on you as the expert or principal. So it is about the hiring process, trying to look at the people you have; I think has to do with moving people to different places. Some cases it’s growing the right people.”

– Jim, elementary school principal
Development

- System and organizational (infra)structure
  - Designing infrastructures to support instruction and its improvement
  - Preparing school leaders to diagnose and design

- School administrative practice and the resources that enable it
  - Getting at the micro processes of administration while not losing site of macro structures
  - Beyond the school principal to other formal leaders (full-and part-time) and informal leaders
Role of Research in Development

- Providing regular and structured feedback to research sites on our research findings
  - Engage study participants in diagnostic and design work using their own data
  - Challenges: human subject protection, research design

- Modules for developing administrative practice
  - Distributed perspective: leadership teams, focus on practice
  - Research findings inform module design
  - Diagnostic and design activities developed around cases
  - Translating theoretical and conceptual frames for practitioner use
Pleasantville District Elementary Math Network
A Task

Imagine you are introducing a new STEM curriculum in Fern Hill and Pink Hamlet High Schools.

Examine the advice networks in the two high schools:

- What patterns do you notice that might be relevant to your program implementation efforts?
- Identify two differences between the schools that you would consider in your implementation efforts.
- How would your implementation efforts differ from Pink Hamlet as compared to Fern Hill High School?
Leadership Distribution

In-Degree

Math Facilitator

Principal

In-Degree

Principal

Special Ed

5th Grade
Subject Matter Differences

English language arts

Mathematics
Network Selection Modeling: Multilevel p2

The level 1 model is:

$$\log \left( \frac{p[advice_{ij}=1]}{1-p[advice_{ij}]=1} \right) = \alpha_j + \beta_i + \delta_1 \text{ (Prior relationship)}_{ij} + \delta_2 \text{ (Same race)}_{ij} + \delta_3 \text{ (Same gender)}_{ij} + \delta_4 \text{ (Common grade taught)}_{ij} + \delta_5 \text{ (Difference in professional development)}_{ij} + \delta_6 \text{ (Reciprocity: advice}_{ji})$$
Network Selection Modeling: Multilevel p2

The level 2 model is:

Level 2a \((j: \text{ provider effect})\)

\[
\alpha_j = \gamma_0^{(\alpha)} + \gamma_1^{(\alpha)} \text{New teachers}_j \\
+ \gamma_2^{(\alpha)} \text{Multiple-grade teachers}_j \\
+ \gamma_3^{(\alpha)} \text{Formally designated leaders}_j + u_{0j}.
\]

Level 2b \((i: \text{ seeker effect})\)

\[
\beta_i = \gamma_0^{(\beta)} + \gamma_1^{(\beta)} \text{life/career stage}_i \\
+ \gamma_2^{(\beta)} \text{Professional development}_i + v_{0i}.
\]