Analyzing Educational Policies: A Learning Design Perspective

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The analysis reported in this chapter was supported by the National Science Foundation under grant Nos. ESI 0554535 and DRL-1119122. Kara Jackson's contributions to the article were also supported by the National Academy of Education/Spencer Postdoctoral Fellowship Program. The opinions expressed do not necessarily reflect the views of either Foundation. We are grateful to Thomas Smith, Chuck Munter, Lynsey Gibbons, Annie Garrison, and three anonymous reviewers for their constructive comments on a previous version of this paper. The empirical case that we present in this article is based on work conducted in collaboration with Thomas Smith, Erin Henrick, Glenn Colby, Annie Garrison, Lynsey Gibbons, Sarah Green, Karin Katterfeld, and Chuck Munter.

Abstract

In this article, we describe and illustrate an analytical perspective in which educational policies are viewed as designs for supporting learning. From the learning design perspective, a policy comprises three components that we term the what, how, and why of policy: the goals for the learning of members of the group targeted by the policy, the supports for their learning, and an often implicit rationale for why these supports might be effective. We unpack the how of policy by describing four types of support for learning: new positions, learning events, new organizational routines, and new tools. Based on our discussion of the rationale for each type of support, we conjecture that policies that are effective in supporting consequential professional learning will involve some combination of new positions that provide expert guidance, ongoing intentional learning events in which tools are used to bridge to practice, carefully designed organizational routines carried out with a more knowledgeable other, and the use of new tools whose incorporation into practice is supported. We present an analysis of a policy that was central to an urban district's efforts to support middle-school mathematics teachers' development of ambitious instructional practices. The data that we analyzed included audio-recorded interviews conducted with teachers, mathematics coaches, school leaders, and district leaders. The sample analysis illustrates that the learning design perspective is useful both when designing policies and when revising policies after implementation to make them more effective.

Analyzing Educational Policies: A Learning Design Perspective

Our purpose in this article is to describe and illustrate an analytical perspective in which educational policies are viewed as designs for supporting learning. The contribution of the resulting *learning design perspective* is that it enables us to identify potential limitations of educational policies before they are implemented, understand why specific policies were implemented in certain ways in particular schools and districts, and inform the formulation of empirically testable recommendations about how policies might be adjusted to make them more effective. Analyses conducted from this perspective are broadly compatible with Bryk and Gomez's (2008) notion of improvement research that is organized around core problems of practice in school settings. In the first part of the article, we clarify the tenets of the learning design perspective by drawing on work in the learning sciences and related fields. Against this background, we then present a sample case to illustrate how analyses conducted from the learning design perspective can inform the revision of policies.

Policies as Designs for Supporting Learning

As Coburn and Stein (2006) observed, a policy is an intentional attempt by members of one group to influence the practices of members of another group. A myriad of school and district policies have implications for classroom teaching and learning (e.g., fiscal policies that increase the size of mathematics classes). In this article, we restrict our focus to educational policies that are intentionally formulated to bring about changes in teaching and/or learning by influencing the practices of members of one or more target groups (e.g., teachers, coaches, principals, district mathematics specialists, district leadership directors). Examples of such policies include that teachers should organize

their instruction around tasks of high cognitive demand, and that principals should become instructional leaders by observing instruction and giving teachers feedback.

An analysis of educational policies conducted from the learning design perspective distinguishes between three components of a policy that we refer to as the what, why and how of policy. The *what of policy* corresponds to the envisioned forms of practice that constitute the learning goals for the group targeted by the policy. The *how of policy* comprises any supports for learning that are specified in the policy. The *why of policy* concerns an often implicit rationale for why the supports might enable the members of a target group to attain the learning goals. It is important to stress that the learning design perspective on policy is an analytical approach and does not make any claims about policymakers' intentions as they formulate policies. Its applicability is therefore not restricted to cases in which policy makers view themselves to be developing designs for supporting others' learning.

The learning design perspective builds on work in educational policy that emphasizes that policy implementation involves active sense making by teachers and other practitioners, thereby implicating their understanding of subject matter, teaching, students, and learning (Spillane, Reiser, & Gomez, 2006; Stein & Nelson, 2003). Studies of policy implementation conducted from this sense making perspective focus squarely on the what of policy and document the changes that teachers and other targets of policy actually make in their practices (Honig, 2006; Stein, 2004). The findings of these studies call into question the common assumption that implementation failure involves either willful distortion or resistance, and that incentives and penalties will be sufficient to remedy the situation (Elmore, 2004). Studies that attend to practitioners' sense making

also indicate that successful implementation involves a process of mutual adaptation between the intended policy and the local context in which implementers modify policy goals and strategies to suit local conditions (McLaughlin, 1987). In addition, Coburn's (2001) investigation of teacher groups revealed that sense making is a collective as well as an individual activity in which the common worldview and shared understandings of the group both privileges certain policies for revising practice and influences how those policies are understood.

Researchers who take a sense making perspective also emphasize that policy implementation involves the reorganization of practice. As Cohen and Barnes (1993) observed, any serious policy that does not simply endorse current practice and call for more of it requires implementers to develop new capabilities and unlearn present capabilities. In the last few years, several studies conducted from the sense making perspective have focused on the how of policy as well as the what of policy (Coburn & Russell, 2008; Penuel, Frank, & Krause, 2006; Stein & Coburn, 2008). These studies have begun to clarify how schools and districts can support teachers' development of increasingly effective instructional practices by analyzing cases of successful policy implementation. They also substantiate Cohen and Barnes' (1993) contention that implementation can be viewed as a species of learning, and policy as a sort of instruction that should include the provision of supports for learning.

The learning design perspective extends this line of work by bringing to the fore the learning demands of specific policies, the intended supports for learning specified in policies, and the learning supports that are actually implemented or enacted. In the

following section, we present a taxonomy of different types of supports for learning that we then employ in the illustrative case.

The How and Why of Policy

Our purpose in developing a taxonomy of learning supports was to clarify the potential of each type of support as a scaffold for practitioners' development of more effective practices. The taxonomy emerged during the first three years of a collaboration with district leaders, school leaders, and mathematics teachers in four urban districts including the district in which the sample case will focus, and from a consideration of the literature on school and district instructional improvement. We drew heavily on research in the learning sciences when assessing the potential of the various types of supports for learning that we identified, and viewed co-participation with others who have already developed relatively accomplished practices as crucial (Lave & Wenger, 1991; Rogoff, 1997; Sfard, 2008). The taxonomy focuses on four broad types of supports: new positions (or changes in the responsibilities of existing positions), learning events, new organizational routines, and new tools. In presenting the taxonomy, we take as an example the learning goal that principals should become effective instructional leaders in mathematics (i.e., the what of policy) and discuss the rationale for each type of support (i.e., the how and why of policy).

New Positions

School and district policies for instructional improvement typically include changes in the responsibilities of existing positions, such as principals becoming effective instructional leaders in mathematics. In addition, improvement efforts often include the creation of new positions whose responsibilities include supporting others' learning. We

distinguish between cases in which the intended support for learning is direct (expert guidance) and cases in which it is indirect (sharing responsibilities).

Expert guidance. In some cases, the holder of the new position is expected to support learning directly by providing expert guidance. For example, the district on which we will focus created the position of a school-based mathematics coach in each middle school. The responsibilities of the mathematics coaches included supporting their principals in becoming instructional leaders in mathematics. This aspect of the policy assumes that the coaches have developed greater expertise as instructional leaders in mathematics and can therefore guide principals as they attempt to support mathematics teachers' improvement of their classroom practices (Bryk, 2009; Spillane & Thompson, 1997).

The importance that we attributed to the expertise or knowledge-in-practice of the holder of the new position follows directly from Vygotskian accounts of human development (Kozulin, 1990; van der Veer & Valsiner, 1991; Vygotsky, 1978) and is supported by studies of apprenticeship and coaching (J. S. Brown, Collins, & Duguid, 1989). We therefore view the provision of expert guidance by creating new positions (or changing the responsibilities of existing positions) as a primary support for learning. The extent to which the investment in the new position will pay off is likely to be influenced by a variety of factors in addition to the expertise of the appointee. These additional factors include the overall coherence of school or district instructional improvement policies and the extent to which the expert and target of policy co-participate in activities that are close to the intended forms of practice.

Sharing responsibilities. Schools and districts also create new positions in the expectation that the appointees will take over some of the responsibilities previously fulfilled by the targets of policy. In such cases, the rationale for the new position is often to provide indirect support for learning by enabling the targets to focus on improving practices that address other responsibilities. For example, a second district with which we are working has created the position of school administrative manager to take over some of the principal's administrative responsibilities, thereby enabling the principal to focus more directly on instructional leadership. In this and similar cases, the rationale for the new position is to increase the opportunities for targets' learning rather than to provide direct support or guidance for their learning. We therefore view the sharing of responsibilities as a supplementary means of support because it is unlikely to be effective unless some form of direct support is also provided.

Learning Events

Most school and district instructional improvement efforts include professional development for teachers and, on occasion, for members of other role groups including principals. We treat professional development sessions as instances of learning events, which we define as scheduled meetings that can give rise to opportunities for targets of policy to improve their practices in ways that further policy goals. We consider both learning events that are intentionally designed to support targets' learning and those that might give rise to incidental learning.

Intentional learning events. A distinction that proves useful when analyzing the strengths and weaknesses of educational policies is that between intentional learning events that are ongoing and those that are discrete. The two key characteristics of

ongoing intentional learning events are that they are designed as a series of meetings that build on one another, and that they involve a relatively small number of participants. As an example, a district mathematics specialist might work regularly with middle-school principals as a group in order to support them in recognizing high-quality mathematics instruction when they make classroom observations. Because a small number of participants is involved, the group might evolve into a genuine community of practice[1] that works together for the explicit purpose of improving their practices.

It is important to note that although communities of practice can be productive contexts for professional learning (Horn, 2005; Kazemi & Hubbard, 2008), the emergence of a community of practice does not guarantee the occurrence of learning opportunities that further policy goals (Bryk, 2009). Recent research in both teacher education and educational leadership indicates the importance of interactions among community members that focus consistently on issues central to practice (Marks & Louis, 1997) and that penetrate beneath surface aspects of practice to address core suppositions, assumptions, and principles (Coburn & Russell, 2008). This in turn suggests the value of one or more members of the community having already developed relatively accomplished practices so that they can both push interactions to greater depth (Coburn & Russell, 2008) and provide concrete illustrations that ground exchanges (Penuel, et al., 2006). The critical role of expertise in a community of practice whose mission is to support participants' learning is consistent with the importance attributed to "more knowledgeable others" in sociocultural accounts of learning (Bruner, 1987; Cole, 1996; Forman, 2003).

The key aspects of ongoing intentional learning events that we have highlighted are consistent with the qualities of effective teacher professional development identified in both qualitative and quantitative studies. These qualities include extended duration, collective participation, active learning opportunities, a focus on problems and issues that are close to practice, and attention to the use of tools that are integral to practice (Borko, 2004; Cohen & Hill, 2000; Desimone, Porter, Garet, Suk Yoon, & Birman, 2002; Garet, Porter, Desimone, Birman, & Yoon, 2001). We view ongoing intentional learning events that have these qualities as a primary means of supporting consequential learning that involves the reorganization of practice.

Discrete intentional learning events include one-off professional development sessions as well as a series of meetings that are not designed to build on each other. For example, leaders in the district on which we will focus organized monthly meetings for principals. We classify these meetings as discrete rather than ongoing intentional learning events because principals engaged in activities that focused on instructional leadership in mathematics only occasionally, and these activities did not build on each other. Discrete intentional learning events can be valuable in supporting the development of specific capabilities that elaborate or extend current practices (e.g., introducing a classroom observation tool that fits with principals' current practices and is designed to make their observations more systematic). However, they are by themselves unlikely to be sufficient in supporting the significant reorganization of practice called for in districts that are pursuing ambitious instructional agendas.

Incidental learning events. Learning opportunities are not limited to those that are intentionally designed, but can also arise incidentally for targets of policy as they

collaborate with others to carry out functions of the school or district. For example, middle-school principals and mathematics coaches in the focal district were expected to meet each week to discuss the quality of mathematics teaching in their school and to consider how to address teachers' needs. Although these meetings were not designed to support the principals' learning, it is possible that learning opportunities could arise as a principal interacted with a mathematics coach about instructional issues. In general, the extent to which regularly scheduled meetings with a more knowledgeable other involve significant learning opportunities depends on both the focus of interactions (e.g., the nature of teachers' classroom practices and student learning opportunities) and on whether the expert has in fact developed relatively accomplished practices and the novice recognizes and defers to that expertise (Elmore, 2006; Mangin, 2007). The extent to which significant learning opportunities actually arise in incidental learning events can therefore be assessed by documenting the focus and the depth of interactions. However, the strategy of relying primarily on incidental learning events to support professional learning appears to be an extremely risky.

New Organizational Routines

In addition to creating new positions and planning learning events, instructional improvement policies sometimes include the specification of new organizational routines. Feldman and Pentland (2003) define organizational routines as "repetitive, recognizable patterns of interdependent actions, carried out by multiple actors" (p. 94). Investigations of organizational routines in school settings demonstrate that they can play a critical role in ensuring continuity and thus school stability in the face of high staff turnover (Spillane, Mesler, Croegaert, & Sherer, 2007). In addition, these studies clarify that

organizational routines often evolve incrementally in the course of repeated enactments and can therefore also be a source of organizational flexibility (Feldman, 2000, 2004). Furthermore, as Sherer and Spillane (in press) illustrate, the introduction of carefully designed organizational routines can be an important means of supporting learning.

As an illustration of an organizational routine, leaders in the focal district expected that middle-school principals would conduct learning walks with the mathematics coach at their schools on a regular basis. A learning walk is a repetitive, recognizable pattern of actions that involves determining the focus of classroom observations (e.g., the extent to which teachers maintain the cognitive challenge of tasks throughout the lesson), selecting classrooms to visit, observing a classroom, and then conferring to discuss observations before moving on to the next classroom. In addition, a learning walk is carried out by multiple actors, namely the principal, mathematics coach, and the observed teachers. The intent of this organizational routine was that the mathematics coach would support the principal in coming to recognize key aspects of high-quality mathematics instruction.

In this example, the organizational routine is conducted independently of any formally scheduled meetings. Other organizational routines might be enacted during either intentional or incidental learning events.[2] For example, a district mathematics specialist working with a group of principals might introduce an organizational routine that first involves having principals collect student work on the same instructional task from one or more classrooms in their schools, next having the principals analyze the quality of the student work in small groups, and finally pressing the principals to delineate the characteristics of high-quality work during a subsequent whole group

discussion. Organizational routines in which a more knowledgeable other scaffolds relative novices' learning as they co-participate in a sequence of activities that are close to practice appears to be a potentially productive means of supporting professional learning (Grossman & McDonald, 2008; Lampert & Graziani, 2010).

New Tools

In speaking of tools, we refer to material entities that are used instrumentally to achieve a goal or purpose. Work in the learning sciences and in teacher professional development indicates that introducing carefully designed tools is a primary means of supporting learning (Borko, 2004; Cobb, Zhao, & Dean, 2009; Lehrer & Lesh, 2003; Meira, 1998).[3] In the context of large-scale instructional improvement efforts, designed tools can also play a second important role by supporting members of a particular role group in developing compatible practices, and by supporting the alignment of the practices developed by members of different role groups (e.g., teachers, principals, coaches). Examples include textbooks, curriculum guides, state mathematics objectives, classroom observation protocols, reports of test scores, student written work, and written statements of school and district policies.[4] In discussing the role of tools as supports for learning, we distinguish between tools designed to support learning in intentional learning events such as pull out professional development sessions, and tools designed to be incorporated into practice.

Tools in intentional learning events. Although tools play a central role in most school and district instructional improvement efforts, they have rarely been an explicit focus of analysis in the policy and leadership literature (Coburn & Stein, 2010). In contrast, recent studies of teacher professional development have highlighted the value of

using tools to ground professional development in classroom instructional practice (Ball & Cohen, 1999; Nelson, 1997; Putnam & Borko, 2000; Schifter, 1998; Sherin & Han, 2004). Examples of such tools include instructional tasks, students' written work, and classroom video-recordings. The use of tools of this type addresses Ball and Cohen's (1999) call for professional development activities to be organized around artifacts[5] of practice. As an illustration of this approach to professional development, Kazemi and Franke (2004) facilitated monthly meetings with teachers from one elementary school in which the teachers discussed their students' work on similar mathematics problems. Kazemi and Franke document that the teachers learned to attend to and deepened their understanding of their students' mathematical thinking, and began to develop possible instructional trajectories for their students' mathematical learning.

A number of studies indicate the value of this general approach in supporting teachers' development of ambitious instructional practices in which they build on students' current reasoning to achieve a significant disciplinary agenda (Lampert & Ball, 1998; Lewis, Perry, & Murata, 2006; Sherin & Han, 2004). However, recent investigations also clarify the importance of taking account of how the participants currently use particular artifacts in their practice (Kazemi & Hubbard, 2008). For example principals might currently look at student work to monitor pacing and content coverage whereas the intent of professional development might be that they will review student work to monitor whether teachers are maintaining the cognitive challenge of instructional tasks. It is probable that the principals will use student work to assess pacing when it is introduced in intentional learning events unless the limitations of this way of using student work are made explicit (e.g., by having principals interview students

who appear to have mastered content that has been covered in a procedural manner in order to assess the depth of their understanding).

The above example illustrates the more general point that the movement of artifacts between practice and intentional learning events is not, by itself, sufficient to support substantial learning (Cobb, et al., 2009). It appears crucial to take account of how artifacts are currently used in practice when planning how they will be used in intentional learning events (Beach, 1999). We view tools that are used in this manner as a primary means of supporting consequential professional learning.

Tools in practice. Large-scale instructional improvement efforts almost invariably involve the introduction of a range of new tools designed to be used in practice, including newly adopted instructional materials and revised curriculum frameworks for teachers, and new classroom observation protocols and data management systems for principals. The findings of a number of studies conducted in the learning sciences substantiate Pea's (1993) claim that the incorporation of a new tool into current practices can support the reorganization of those practices (Lehrer & Schauble, 2004; Meira, 1998; Stephan, Bowers, & Cobb, 2003). However, it is also apparent that people frequently use new tools in ways that fit with current practices rather than reorganizing those practices as the designers of the tool intended (Wenger, 1998). For example, the findings of a number of studies of policy implementation and of teaching indicate that teachers often assimilate new instructional materials to their current instructional practices rather than reorganize how they teach as envisioned by the developers of the materials (Cohen & Hill, 2000; Remillard, 2005; Spillane, 1999). These findings suggest

that the design of tools for professional learning should be coordinated with the development of supports for their increasingly accomplished use.

As a first design heuristic, it is important that users see a need for the tool when it is introduced (Cobb, 2002; Lehrer, Schauble, & Penner, 2000). This implies that either the tool should be designed to address a problem of current practice or it should be feasible to cultivate the need for the tool during intentional learning events. As an illustration, consider a classroom observation protocol that has been designed to support principals in focusing not merely on whether students are engaged but also on whether significant learning opportunities arise for them. Most principals are unlikely to see a need for the new observation form unless it is introduced during a series of intentional learning events that might, for example, focus on the relation between classroom learning opportunities and student achievement.

Second, it is also important that the tool be designed so that intended users can begin to use it shortly after it has been introduced in relatively elementary ways that are nonetheless compatible with the designers' intentions and do not involve what A. Brown (1992) termed lethal mutations. In the case of our example, it would seem advisable to minimize the complexity of the observation protocol given the significant reorganization of practice that most principals would have to make to use it in a way compatible with the designers' intentions (Nelson & Sassi, 2005).

Third, in using the tool in rudimentary but intended ways, users have begun to reorganize those practices as they have incorporated the tool. The challenge is then to support their continued reorganization of practice by scaffolding their increasingly proficient use of the tool either during intentional learning events or as they co-participate

in organizational routines with an accomplished user (J. S. Brown & Duguid, 1991; Lave, 1993; Rogoff, 1990). In the case of the observation protocol, for example, mathematics coaches might support principals' use of the tool as they conduct learning walks together. Just as the failure to provide sustained teacher professional development around a new curriculum can lead to difficulties (Crockett, 2007), failure to scaffold principals', coaches', and others' use of new tools is also likely be problematic.

Summary

Based on our discussion of the rationale for the four types of support for learning (i.e., the why of policy), we anticipate that policies that are effective in supporting consequential professional learning will involve some combination of new positions that provide expert guidance, ongoing intentional learning events in which tools are used to bridge to practice, carefully designed organizational routines carried out with a more knowledgeable other, and the use of new tools whose incorporation into practice is supported. We do not discount the support that discrete intentional learning events and incidental learning events might provide and take them into account when analyzing policies. However, research on professional learning and on students' learning in particular content domains indicates that they will, by themselves, rarely be sufficient to support significant reorganizations of practice (Garet, et al., 2001).

The taxonomy elaborates the relatively common approach of analyzing school and district capacity for instructional improvement in terms of the development of human, social, and material (financial) capital. Spillane and Thompson's (1997) analysis of district capacity to support ambitious instruction in mathematics and science is seminal in this regard. In Spillane and Thompson's terms, the function of each type of support for

learning that we have discussed is to increase a district's human capital by scaffolding people's development of increasingly effective practices. Each of the supports also draws on the district's current human capital, namely people who have already developed relatively accomplished practices and can scaffold others' learning. In addition, the supports draw on the district's existing social capital because relationships involving apprenticeship and professional learning entail collaboration and trust (Bryk & Schneider, 2002; Schön, 1986). Furthermore, the enactment of the learning supports can enhance the district's social capital by fostering the development of trust (Halverson, 2003), shared understanding, and professional networks (Penuel, Riel, Krause, & Frank, 2009).

In analyzing the role of financial resources, Spillane and Thompson (1997) focused on the allocation of staffing, time, and materials to the instructional improvement effort. As they observed, teachers' development of ambitious instructional practices, and instructional leaders' development of concomitant leadership practices, requires the direct support of more accomplished others for an extended period of time.[6] They therefore concluded that a threshold of financial resources is necessary, but "it will be the superior human and social capital that they [district leaders] hire or develop, not the material resources themselves, that position them to get richer in capacity for improvement" (p. 199). The taxonomy we have outlined is compatible with and extends Spillane and Thompson's discussion of human, social, and financial capital by foregrounding the design of specific types of learning supports that give substance to the how of policy.

The Case of District B

The case that we present comes from a study designed to address the question of what it takes to improve the quality of middle-grades mathematics teaching, and thus student achievement, at the scale of a large urban district. We conducted this study in collaboration with four urban districts that were attempting to increase student achievement by supporting teachers in improving the quality of their mathematics instruction. In the vision of high-quality instruction that oriented the four collaborating districts' instructional improvement efforts, teachers were expected to continually adjust their plans for instruction to students' developing mathematical capabilities as informed by ongoing assessments of their mathematical reasoning. Instructional practices of this type are complex and demanding (Franke, Kazemi, & Battey, 2007). They require a deep understanding of the mathematical content on which lessons focus (Ball, 2000; Lampert, 2001; Ma, 1999) and of how students' reasoning develops in particular mathematical domains (Carpenter, Fennema, Franke, Levi, & Empson, 1999; Franke, et al., 2007), and involve the development of new instructional routines for building on students' solutions to achieve a mathematical agenda (Ball, Sleep, Boerst, & Bass, 2009). The districts' visions for mathematics instruction therefore constituted ambitious policy goals whose achievement required significant learning on the part of teachers and members of other role groups.

We focus on one of the four districts, District B, to illustrate the usefulness of the learning design perspective on policy. District B serves approximately 80,000 students, over 50% of whom are Hispanic, over 25% are African American, and about 15% are White. Over 25% of all students are classified as Limited English Proficient (LEP). The majority of the students receive free or reduced-price lunches. District B's student

achievement patterns in middle-school mathematics are typical for large, urban districts. For example, on a recent state assessment in eighth grade mathematics, less than 40% of the African American students met the eighth grade mathematics standards, as compared to 55% of the Hispanic students and about 75% of the White students. Only about 25% of the LEP students met the eighth grade standards in mathematics.

In the current climate of high-stakes accountability associated with the federal legislation of the No Child Left Behind (NCLB) Act (U.S. Congress, 2001), leaders of urban districts are under pressure to demonstrate evidence of improvement in students' mathematics achievement. Prior research has documented that leaders in most large urban districts respond to the accountability demands associated with NCLB by implementing policies that emphasize "teaching to the test," providing remedial instruction for students not meeting achievement standards, and, on occasion, "gaming the system" (Heilig & Darling-Hammond, 2008). In contrast, as we detail below, District B central office leaders (e.g., Superintendent, Chief Academic Officer) framed the overall low-performance in middle-school mathematics achievement and the disparities in achievement between sub-groups as a problem of supporting teachers' learning.

Methodology

In the larger study, we conducted four annual cycles of data collection, analysis, and feedback in each of the four districts to identify district and school organizational arrangements, social relations, and material resources that might support improvements in the quality of middle-school mathematics instruction. The case that we present draws on the data collection-analysis-feedback cycle conducted in District B in 2008-2009 during the second year of the study. At that time, District B was in the second year of

implementing an initiative to improve the quality of mathematics teaching and learning in the middle grades.

An annual cycle of data collection, analysis, and feedback comprises five phases:

1) Document the set of policies that comprise the district's theory of action (Argyris & Schön, 1978) for instructional improvement in mathematics.
2) Document how the district's theory of action, or set of improvement policies, is being implemented in schools and classrooms.
3) Identify how and explain why the enacted policies differ from the designed or intended policies.
4) Provide feedback to district leaders about how policies are being implemented in schools, and make actionable recommendations about how the policies might be adjusted to make them more effective.
5) Document the extent to which our recommendations influence the revision of policies for the following academic year.

Below, we explain each of these phases as they were carried out in District B during the second year of the larger study.[7]

Phase one: Document the district's theory of action for instructional improvement. In the fall, we conducted audio-recorded interviews with key leaders in District B whose central office units were involved in the effort to improved middle-school mathematics instruction. These units included: Curriculum and Instruction (C&I), Leadership, Bilingual Education, Special Education, and Research and Accountability. In District B, the Chief Academic Officer (CAO), whom we interviewed, presided over all matters of curriculum and instruction and was centrally involved in the design of policies

for improving middle-school mathematics instruction. Within C&I, we interviewed the leaders of the Mathematics Department (Executive Director of the department and the Director of Secondary Mathematics) and the three district Mathematics Specialists who worked directly with middle-school mathematics teachers and coaches. The Office of Leadership was responsible for assessing and supporting principals and assistant principals. We interviewed the head of Secondary Leadership and one of the three Leadership Directors who was most directly involved in the design of policies for school instructional leadership in the district's 25 middle schools.

The audio-recorded interviews typically lasted one hour and focused on the district's goals for middle-school mathematics instruction and the policies that were being implemented to achieve those goals (e.g., supporting principals' development as instructional leaders, providing high-quality professional development for teachers). We triangulated their responses when we analyzed transcriptions of the interviews and they proved to be generally consistent. We then created a document in which we described the goals for the practices of particular role groups (i.e., the what of the policy), the intended means of supporting the learning of members of those groups (i.e., the how of the policy), and the rationale for why the supports might enable members of the target groups to develop the envisioned forms of practice (i.e., the why of the policy). We shared the resulting document with the CAO who confirmed that our account of District B's theory of action was accurate.

Phase two: Document how the district's theory of action is being implemented in schools and classrooms. At the beginning of the larger study, we purposefully selected a sample of seven middle schools in District B that reflected

variation in student performance and in capacity for improvement across district middle schools. The principal, mathematics coach, and up to five randomly selected mathematics teachers in each school participated in the study. The data we collected in the winter to document how the district's improvement policies were being enacted included: video-recordings of teachers' classroom instruction; assessments of teachers' and coaches' mathematical knowledge for teaching (Hill, Ball, & Schilling, 2008); video-recordings of pull-out teacher professional development; audio-recordings of school-based mathematics teacher meetings; audio-recorded interviews and surveys of teachers, coaches, and principals; and audio-recorded interviews of district leaders. In addition, we had access to student achievement data.

For the analysis reported in this article, we relied primarily on interview data. The approximately 50 semi-structured interviews that we conducted in District B were guided by one of nine different interview protocols depending on the position of the interviewee. The questions we asked teachers, coaches, and principals in the seven focal schools were informed by the district's theory of action and focused on a range of issues including participants' visions of high-quality mathematics instruction, the formal and informal supports they could draw on to improve their practices, and to whom and for what they were accountable. We also interviewed the central office leaders listed in the description of phase one, as well as the remaining two Leadership Directors, to gauge their perspectives on the implementation of the various policies, find out their visions of high-quality mathematics instruction, and document their perceptions of the support they provided to others and received themselves as part of the improvement effort. The

interviews typically lasted between 45 and 60 minutes, and all interviews were transcribed.

In analyzing the interview transcripts, we sought to identify patterns in the principals', coaches', and teachers' reports of the support they had received for improving their practices. First, a member of the research team completed an Interview Summary Form (ISF) for each interview transcript. The ISF summarized the sources of formal and informal assistance on which the participant drew, to whom the participant perceived herself to be accountable and what she was accountable for, and so forth. Next, we created detailed accounts of how each of the policies in District B's theory of action was playing out *within* each of the seven schools by completing School Summary Forms (SSF) in which we synthesized the teachers', mathematics coach's, and principal's ISFs for each school. In addition, we created detailed accounts of how each of the policies was playing out *across* the seven schools by completing mid-level summary forms that synthesized the accounts of members of each role group (i.e., teachers, mathematics coaches, principals). In developing these syntheses, we took care to triangulate participants' accounts for each policy. For example, our claims about principals' practices (reported below) are based on the triangulation of principals', coaches', and teachers' accounts of these practices.

Phase three: Identify how and explain why the enacted policies differ from the designed or intended policies. We conducted a gap analysis by comparing the policies as designed by district leaders with how the policies were being implemented in the seven schools. This involved comparing intended goals to enacted policy goals by focusing on issues of accountability (i.e., the what of the policies), and the enacted

supports for teachers', mathematics coaches', and principals' learning to the intended supports for their learning (i.e., the how of the policies). We then analyzed the SSFs and mid-level summary forms (described above) in order to understand why specific policies were being implemented in certain ways and not in others in particular schools and across the district. This analysis involved identifying aspects of the school and district settings in which members of particular role groups worked that appeared to influence their development of practices that differed from those that the policies were designed to support. The resulting accounts of teachers', coaches', and principals' practices were therefore situated with respect to the organizational arrangements, social relationships, and material resources that comprised the settings in which they worked. This approach enabled us to explain why teachers, coaches, and principals were developing particular practices and not others by delineating how these settings afforded and constrained their learning. Crucially, these settings included the supports for their learning as they were actually being enacted (i.e., the implemented how of the policies).

Phase four: Provide feedback to district leaders. In addition to reporting our findings to district leaders, we drew on the gap analysis to recommend revisions in the district's improvement policies for the following academic year. Shortly before the end of the academic year, we presented our findings and recommendations to key district leaders in a written report and in a subsequent two-hour meeting. The timing of the feedback was intentional as leaders in most districts develop and revise instructional policies for the following school year during the summer.

Phase five: Document the impact of our recommendations. In the fall of the following academic year, we again documented the district's theory of action for

instructional improvement (see phase one above). We assessed the impact of our feedback and recommendations on District B's policies by noting changes in the district's theory of action from the previous year and comparing these changes with the feedback recommendations that we had discussed with district leaders.

District B's Theory of Action for Improving Middle-School Mathematics Instruction

The whats of the two primary policies that the district was attempting to implement were: 1) teachers would develop high-quality instructional practices that would enable all students to both understand significant mathematical ideas and develop procedural fluency, and 2) principals would develop instructional leadership practices that involved supporting and holding teachers accountable for developing high-quality instructional practices.

We discuss the second of these policies in some detail in the next section of this article. With regard to the how of the first policy, the designed supports for middle-school mathematics teachers' learning included the adoption of an inquiry-oriented middle-grades mathematics textbook series, the creation of an elaborate Curriculum Framework that was designed to support teachers in using the text effectively, and pull-out professional development conducted by members of the Mathematics Department. In addition, the district was in the second year of implementing a school-based mathematics coaching program in all middle schools that was designed to support the implementation of the recently adopted textbook series. Coaches' primary responsibilities were to support teachers' development of high-quality instructional practices (e.g., by observing instruction and providing feedback, co-teaching, modeling instruction) and principals'

development of content-specific instructional leadership practices. Principals had been asked to choose a mathematics teacher who had already developed relatively accomplished instructional practices from their staff to serve as a coach. The selected teachers received relatively intensive professional development and were expected to teach middle-school mathematics half of each day and act as a coach for their peers the other half of the day.

In our assessment, District B's theory of action for instructional improvement was coherent because the two policies that comprised it address the overall objective of supporting and holding teachers accountable for using the inquiry-oriented textbook series effectively. Interviews conducted with district leaders during the second year of the study indicated that the decision to address accountability demands associated with NCLB by supporting teachers' development of ambitious instructional practices had been purposeful, and that they consistently conceptualized their work in terms of designing and implementing supports for teachers', coaches' and principals' learning.

District B's Policy for Principals as Instructional Leaders in Mathematics

We illustrate the predictive and explanatory power of the learning design perspective on policy by focusing on District B's policy that principals would support and hold mathematics teachers accountable for developing high-quality instructional practices. Our purpose in discussing this policy in some detail is to clarify how the learning design perspective allowed us to anticipate limitations of the designed policy, account for differences between the designed and enacted policy, and make actionable recommendations about revising the policy for the following year.

The what of the policy that principals would become instructional leaders in mathematics specified three related practices:

1) observe classroom instruction regularly, look for the implementation of the adopted text and the Curriculum Framework, and provide feedback on instruction;
2) conduct learning walks, sometimes with the coach, to assess building needs and to determine the nature of assistance that teachers need to improve their instructional practices; and
3) work with the coach to ensure that the coach is providing appropriate professional development at the school.

These practices required that principals develop a relatively sophisticated vision of high-quality mathematics instruction so that they could distinguish between strong and weak inquiry-oriented mathematics instruction. In the interviews that we conducted with the principals during the first year of the larger study, we had asked them what they would expect to see if mathematics was of high quality, and had probed on what the teacher would be doing, the indicators of a productive whole class discussion, and what might constitute a high-quality mathematics task. Most of the principals described high-quality mathematics instruction in general, content-free terms (e.g., "kids work in groups," "teacher communicates clear expectations"). In addition, the principal and teacher interviews indicated that although principals were spending a significant amount of time in classrooms, the feedback that they gave teachers focused on surface features of instruction (e.g., presence of a word wall or posting objectives rather than pressing students to explain their reasoning during class discussions or maintaining the rigor of

instructional tasks). These findings indicate that the learning demands of the policy were significant: principals would have to learn to focus not merely on the surface features of instruction, but on the learning opportunities that arise for students (Cobb & Smith, 2008; Saxe, Gearhart, Franke, Howard, & Crockett, 1999; Spillane, 2000).

Assessing the what of the designed policy. The first step in assessing a policy as designed is to scrutinize the what of the policy by asking whether the policy is likely to result in the intended outcomes if practitioners develop the envisioned forms of practice. In the case at hand, the question is whether principals' enactment of the three practices listed above is likely to support teachers in improving their classroom instruction. In our assessment, if the principals could learn to distinguish between strong and weak mathematics instruction, they might be able to communicate expectations for instructional improvement that are consistent with the district's theory of action when making classroom observations. This press for improvement could be important provided there is a distribution of instructional leadership such that the mathematics coach supports teachers' learning directly and the principal holds teachers accountable for improving their teaching. In addition, if principals could distinguish between strong and weak mathematics instruction, they might be better able to identify teachers' needs and, in collaboration with the coach, plan or procure additional supports for their learning (e.g., from district mathematics specialists or external consultants). They might also be able to capitalize on the instructional expertise available in the school more effectively, and might make more informed hiring decisions (Stein & Spillane, 2005). Furthermore, they might appreciate the importance of the coach's work, and both legitimize that work and ensure that the coach is not assigned additional responsibilities that takes her away

from direct work with teachers (Gibbons & Cobb, 2010; Mangin, 2007; Matsumura, Sartoris, Bickel, & Garnier, 2009). We therefore concluded that the attainment of the what of District B's policy for principals as instructional leaders might contribute to the intended outcome, improvement in the quality of classroom instruction.

Assessing the how and why of the designed policy. The second step in assessing a policy as designed is to scrutinize the how and why of the policy by asking whether the designed supports for learning are likely to result in practitioners developing the envisioned forms of practice. In the case at hand, the question is whether the planned supports for principals' learning are likely to be adequate given the significant learning demands of the policy.

New positions. The creation of the position of mathematics coach in all middle schools was a key component of District B's long-term instructional improvement in middle-school mathematics. It was evident from our interviews with district leaders that they anticipated that principals would need ongoing support from more expert others if they were to develop the intended leadership practices. Part of the rationale for the position of mathematics coaches was to provide expert guidance for principals in instructional leadership.

Learning events. In our analysis of the how of District B's designed policy for principals as instructional leaders, we did not identify any ongoing intentional learning events. However, the designed supports for principals' learning did include both discrete intentional learning events and incidental learning events. The discrete intentional learning events occurred during monthly meetings of middle-school principals led by the head of Secondary Leadership. These meetings included professional development on

learning walks and classroom observations that was not specific to mathematics but was instead intended to apply to any content area. Members of the Mathematics Department worked with the principals occasionally during the meetings to orient them to the recently adopted mathematics textbooks and the Curriculum Framework. In addition, the meetings also included the review of student work, some of which was mathematics student work. We classified the monthly principal meetings as discrete rather than ongoing intentional learning events because the meetings were not designed to build on one another, and because issues specific to mathematics instruction were discussed only occasionally.

The incidental learning events we identified were weekly meetings that principals were expected to conduct with the coaches in their buildings (i.e., mathematics, English language arts, social studies, science). During these meetings, the coaches were expected to share observations about the quality of the instruction they observed during the prior week and to work with the principal to determine how to support struggling teachers. The principal and coaches were also expected to discuss campus improvement plans, examine student achievement data, and discuss how to use these data to improve instruction. We classified these weekly meetings as incidental learning events because it was possible that principals might learn about aspects of mathematics instruction and instructional leadership while talking with a more knowledgeable other, the mathematics coach, even though the meetings were not intentionally designed to support principals' learning.

New organizational routines. We identified one organizational routine whose enactment might give rise to learning opportunities for principals. As we have noted,

district leaders expected that middle-school principals would conduct learning walks with the mathematics coach at their schools on a regular basis. The intent of these learning walks was for coaches to assist principals in assessing the quality of teachers' instructional practices and in determining teachers' needs (e.g., for professional development). It is possible that these exchanges could involve learning opportunities for principals.

New tools. We identified two types of tools whose use might support principals' development as instructional leaders. The first tool was student work on the same mathematics tasks that principal were to review periodically in their monthly meetings. The intent of examining this work was to support principals in determining whether students had learned particular mathematics standards in the curriculum. This activity had the potential to support principals' development as instructional leaders provided their current observational practices were taken into account (Cobb, et al., 2009; Kazemi & Hubbard, 2008).

The second tool designed to support principals' learning were curriculum maps create by members of the Mathematics Department. Each map included a pacing schedule for each six-week instructional module together with descriptions of the concepts being taught, resources teachers should use, expected student products, and expected student assessments. The intent of the curriculum maps was to orient and support principals' classroom observations. However, no professional development was planned to support principals in using the maps.

Summary. Table 1 provides a summary of our analysis of the how and why of District B's designed policy for supporting principals' development as instructional leaders.

==========INSERT TABLE 1 ABOUT HERE==========

Anticipating Limitations of the Designed Policy

One of the advantages of the learning design perspective is that it enables us to anticipate the limitations of specific policies before they are implemented. In the case of District B's policy for principals as instructional leaders, the only designed support we identified that involved co-participating in activities close to practice with a more knowledgeable other was the planned learning walks that principals were expected to conduct with a mathematics coach. Crucially, we were not able to identify any ongoing intentional learning events. It is unlikely that discrete intentional learning events (the monthly principal meetings) would support the principals' development of a vision of high-quality mathematics instruction. Although the how of the district's policy included a new tool designed specifically for principals (the curriculum maps), no supports were planned to scaffold their incorporation of the tool into practice. We therefore anticipated that principals would assimilate this tool into their current observational practices rather than reorganize those practices as intended. In addition, we questioned whether the incidental learning opportunities that might arise during principals' weekly meetings with coaches on their campuses would, by themselves, support the principals' reorganization of their practices.[8]

Our analysis of District B's designed policy for principals as instructional leaders indicated that its effective implementation depended unduly on a single support, the learning walks with a coach. The extent to which learning opportunities actually arose for principals during the enactment of this organizational routine depended both on whether the coaches were indeed more knowledgeable others and on whether the principals deferred to their expertise. In general, an analysis of this type conducted from the learning design perspective can suggest modifications that might improve policies before they are implemented.

Documenting the Enacted Policy

We documented how District B's policy for school instructional leadership was being enacted midway through the academic year by analyzing interviews conducted with principals, teachers, coaches, and district leaders. As we have noted, the leadership practices that principals were expected to develop required a relatively sophisticated vision of high-quality mathematics instruction. In the interviews conducted during the second year of the larger study, we again asked the seven principals what they would expect to see if they observed a mathematics teacher whose instruction was of high quality. Their responses indicated that their instructional visions remained underdeveloped. As was the case the previous year, they tended to focus on surface features of high-quality instruction rather than on the function of these features in supporting students' mathematical learning (Spillane, 2000). For example, most of the principals said that teachers should be facilitators in the classroom, that instruction should include student discussion, and a few said they should use problem-solving tasks with multiple solution paths. However, none of the principals' responses indicated that they

had developed an understanding of how elements of instruction, such as student discussion, can be organized to support students' mathematical learning.

Principals were also expected to observe classroom instruction regularly to look for the implementation of the inquiry-oriented text and the Curriculum Framework, and to provide teachers with feedback on their instruction. The teachers indicated that most principals continued to observe instruction regularly. However, similar to the previous year, teachers also reported that principals' feedback tended to focus on easily observable elements of instruction (e.g., objectives posted, presence of word walls) and on the extent to which students were engaged in the lesson. In addition, the majority of teachers reported that their principal used a generic observation form that was not specific to mathematics. There was therefore little if any improvement in the practice of observing instruction and giving feedback from the previous year, and the feedback that teachers received failed to communicate expectations that were consistent with the district's theory of action.

As we have indicated, principals were expected to conduct learning walks with coaches to assess teachers' instructional practices and to determine the assistance they might need to improve their teaching. Principals reported that they only occasionally took learning walks, and only one of the seven principals reported conducting learning walks with a mathematics coach. Principals said that coaches' schedules made it difficult to schedule learning walks. This finding is significant given that the planned learning walks were the primary means of supporting the principals' development of more sophisticated visions of high-quality mathematics instruction.

In addition, principals were expected to work with the coach to ensure that the coach provided appropriate professional development at the school. Both principals and coaches reported that they met regularly. In interviews, we asked principals and coaches to describe the focus of the meetings. We found that in half of the schools, meetings focused on issues such as the pacing of instruction, while in the other schools, they focused on teachers' classroom practices (e.g., what should happen in a whole class discussion after students have worked on a task). There was little evidence that principals and coaches were working together to plan for appropriate professional development.

Accounting for Differences Between the Designed and Enacted Policy

Table 2 summarizes our comparison of the practices that district leaders expected principals to develop (i.e., the what of the policy) with the practices that they were actually developing. In accounting for the gaps we identified, we purposefully situated

==========INSERT TABLE 2 ABOUT HERE==========

principals' leadership practices in the school and districts settings in which they worked. In doing so, we considered how the supports for principals' learning were actually implemented as the enacted supports were key aspects of these settings. We identified three aspects of the school and district settings that appeared to be relevant in explaining why the principals' leadership practices differed from those intended by District B leaders: accountability relationships with the Leadership Directors, the implemented

supports for principals' learning, and the expertise of the school-based mathematics coaches.

Accountability relationships with the Leadership Directors. District B's policy for principal instructional leadership specified that the three Leadership Directors who worked directly with principals were to hold them accountable for supporting the improvement of teachers' instructional practices (e.g., observing classroom instruction, conducting learning walks, providing support for struggling teachers). However, the principals all reported that the Leadership Directors primarily held them accountable for improving student achievement on state assessments, and only secondarily for observing and supporting the improvement of instruction.

The interviews we conducted with district leaders indicated that there was limited collaboration between the Leadership Department and the C&I Department (including the CAO), and that the two departments were attempting to implement conflicting policies for principal instructional leadership.[9] As research on instructional coherence would predict (Bryk, Sebring, Allensworth, Luppesco, & Easton, 2010; Newmann, Smith, Allensworth, & Bryk, 2001), this conflict in agendas was consequential for many of the teachers in our study. For example, the teachers in some schools reported that the principal expected them to spend half of each class period preparing for the state assessment and half using the inquiry-oriented text. Additionally, teachers in a few of the schools reported that the majority of collaborative planning time was spent on test-prep activities (e.g., creating test-formatted warm-ups, planning how to teach particular test items). This tension also had implications for what principals expected of their mathematics coaches. Half of the coaches reported that their principal expected them to

analyze student achievement data to identify students for tutoring, create lesson plans for tutoring, and in some cases actually hire the tutors. These additional responsibilities limited the time that coaches could work with mathematics teachers and were in conflict with the district expectations for coaches.

Implemented supports for principals' learning. We questioned the adequacy of the designed supports for principals' learning when we analyzed District B's policy for principals before it was implemented. Our analysis of the learning opportunities that actually arose for principals indicates that the implemented supports were insufficient to support their development of the types of practices envisioned by district leaders. Principals reported receiving little professional development that was specific to middle-school mathematics instruction aside from informal conversations that occurred during the monthly principal meetings. Although district leaders had planned to examine student work during monthly principal meetings, principals reported that this did not occur. In addition, principals took very few learning walks with the mathematics coach at their school. As a consequence, there were few opportunities for principals to work with a more knowledgeable other on their instructional leadership practices. Although principals did meet regularly with the coaches at their campus, these meetings gave rise to few incidental learning opportunities. In interviews, principals also reported that they were not using the curriculum maps to guide their observation of classroom practice. This was attributable at least in part to the lack of support for principals to learn how to use the tool in practice. The need for additional supports became evident in our interviews when several principals expressed a desire for professional development on how to recognize high-quality instruction that was specific to the inquiry-oriented text so

that they would have a clearer idea of what to look for when observing mathematics instruction, and where to focus their feedback.

Expertise of the mathematics coaches. In the district's policy, mathematics coaches were expected to serve as more knowledgeable others who would support principals in their role as instructional leaders. However, the coaches were only in their second year of using the recently adopted text (as were most of the teachers) and were yet to develop sophisticated visions of high-quality instruction. The interviews we conducted with the coaches indicated that their visions of high-quality instruction varied in detail and depth. The majority of the coaches articulated a vision of high-quality mathematics instruction that was compatible with the district's goals (e.g., emphasis on the teacher as a facilitator, student discussion, problem-solving tasks with multiple solution paths). However, similar to the principals, most coaches were yet to develop an understanding of how elements of instruction (e.g., student discussion) could be organized to support students' learning of mathematics. Given that coaches' visions were generally only slightly more developed than those of the principals (and teachers), it was not evident that they could support principals in becoming effective instructional leaders in mathematics (e.g., scaffolding principals' classroom observations and feedback).

Recommending Revisions to the Policy

We drew on our analysis of District B's policy and its implementation to make recommendations to district leaders about how they might revise the policy to make it more effective. As we have indicated, our initial assessment indicated that the what of the policy was reasonable: it was likely that principals would contribute to improvements in the quality of instruction if they developed the envisioned instructional leadership

practices. The recommendations that we made therefore focused on the limitations that we identified in the how of the policy and concerned accountability relations and supports for principals' learning.

Accountability relations. We reported to district leaders our finding that the differing agendas of the Offices of Leadership and C&I were consequential for how classroom lessons were organized, for the time available for coaches to work with teachers, and for how collaborative planning periods were used. We acknowledged that it would be difficult to address the tension between improving the quality of instruction and raising test scores given the very real consequences that district and school leaders would face if student achievement did not increase in the short term. Against this background, we recommended that the Offices of Leadership and C&I reach consensus on what principals should hold mathematics teachers accountable for, what principals should expect of mathematics coaches, and how principals should communicate those expectations to teachers and coaches. In addition, we suggested that personnel from both Offices clarify with principals and coaches that the work of coaches should focus on improving the quality of instruction in the long-term rather than on tutoring to increase student achievement in the short term. (In a separate set or recommendations, we proposed additional supports for mathematics coaches' learning.)

Interviews conducted with district leaders the following fall to document their current theory of action indicated that they were acting on these recommendations to a significant extent. The Office of Leadership now attempted to ensure that Leadership Directors' expectations for principals were consistent with the district's theory of action, and also placed an increased emphasis on how the Leadership Directors might

communicate those expectations to principals. For example, Leadership Directors were to conduct learning walks with principals on a regular basis so that they could convey their expectations for and assessments of instruction. Principals were also expected to hold weekly instructional leadership meetings in which a Leadership Director would participate along with coaches.

Support for principals' learning. We recommended that the district provide sustained professional development (i.e., ongoing intentional learning events) for principals that focused on recognizing high-quality mathematics instruction and giving feedback to teachers that was specific to the inquiry-oriented text. We suggested that the mathematics coaches participate in at least some of this professional development with principals so that they might also deepen their understanding of the district's vision of high-quality mathematics instruction and so that principals might come to understand the coach's role in supporting instructional improvement. We also suggested that the principals and mathematics coaches conduct learning walks together so that the coach might support the principal's understanding of high-quality mathematics instruction specific to the adopted text.

The interviews we conducted the following fall revealed that district leaders had revised the policy for supporting principals' learning by including sustained professional development designed by the Mathematics Department that was to be organized around the inquiry-oriented text and would focus on recognizing high-quality instruction. However, the planned professional development did not include a focus on providing feedback to teachers. Table 3 summarizes our recommendations and the revisions that district leaders subsequently made to the how of the policy.

==========INSERT TABLE 3 ABOUT HERE==========

It is worth noting that even though district leaders adjusted this and other policies in response to our feedback, we identified potential problems of the revised policy when we analyzed it the following year. For example, although we recognized that the weekly instructional leadership meetings might enable principals to clarify their expectations for coaches, we anticipated that these meetings would not support principals' learning given the participants' lack of mathematics specific instructional expertise (unless the coaches' visions of high-quality mathematics instruction improved significantly). We subsequently analyzed the enactment of this policy from the learning design perspective and made further recommendations to district leaders about how they might revise the policy.

We are concerned that the reader might conclude erroneously from our analysis of the policy for principals as instructional leaders that the District B leaders were less than competent. In our view, the limitations we have identified attest to the complexity of and the challenges inherent in attempting to support instructional improvement at scale. District B leaders stood out from the leaders of most urban districts by framing the problem of improving student achievement as one of supporting principals', coaches', and teachers' learning. As a consequence of this framing, they had to venture into uncharted territory where research could provide only limited guidance and where documented examples of successful instructional improvement efforts were in extremely short supply. The overall coherence of policies that comprise their theory of action

indicates the thoughtful nature of their policy-making efforts. In the course of our collaboration with the District B leaders, we came to admire their steadfastness of purpose, skillful marshalling of resources, and openness to feedback about how their policies are actually playing out.

Discussion and Conclusion

In this article, we have described and illustrated an analytical perspective in which policies are treated as designs for supporting learning. An analysis conducted from this perspective focuses on three components of a policy: goals for the learning of members of a target group, supports for that learning, and an often implicit rationale for why the supports might prove effective. We have referred to these components as the what of policy, the how of policy, and the why of policy, respectively. We presented our analysis of District B's policy for principals as instructional leaders in mathematics to illustrate the usefulness of the learning design perspective on policy. We assessed the policy prior to implementation by first gauging its learning demands by comparing the envisioned practices that constituted the what of the policy with targets' current practices. We then assessed the adequacy of the designed supports for the targets' learning that constituted the how of policy and identified several potential limitations of the policy. The identification of possible difficulties a priori indicates the value of adopting the learning design perspective when formulating policies, particularly in cases in which the what of the policy involves significant learning. In addition, we illustrated in the sample case that analyses of policy implementation conducted from the learning design perspective can inform the development of recommendations about how the policy might be revised to

make it more effective. Two characteristics of the learning design perspective contribute to its usefulness.

First, in presenting a taxonomy of learning supports, we clarified the rationale for each type of support by drawing on recent work in the learning sciences, teacher education, and related fields. This attention to the why as well as the how of policy enabled us to anticipate potential limitations in the illustrative case of District B's policy for principals as instructional leaders. Second, analyses of how policies are playing out that are conducted from the learning design perspective situate the practices that practitioners are developing with respect to the school and district settings in which they are developing those practices. The implemented supports for learning are key aspects of these (evolving) settings. The resulting analyses therefore relate practitioners' learning to the implemented supports and can thus inform the formulation of empirically testable recommendations about how the policy might be adjusted to make it more effective.

We conclude by clarifying the conceptual entailments of the learning design perspective on policy. As Cohen, Moffitt, and Goldin (2007) observed, people at all levels of the US education system both make policies and are practitioners targeted by others' policies. For example, the principals in District B were the targets of district policies and also made and enacted policies that targeted mathematics teachers. For their part, teachers were the targets of district and school policies, and made and enacted policies that targeted students' mathematical practices. The what of teachers' policies concerned their goals for students' learning, and the how was specified as they developed lesson plans aimed at supporting their students' learning.

Consistent with Cohen et al.'s (2007) observation, the implementation of a district or school policy is viewed from the learning design perspective as a process in which practitioners at multiple levels of an educational system reorganize and elaborate their practices (or not) in settings shaped by others' policymaking efforts. For example, the principals in District B developed their instructional leadership practices in settings shaped by the policy making efforts of leaders in the Office of Leadership and C&I. The goal, therefore, when analyzing the implementation of a policy from the learning design perspective is to document and account for the situated reorganization of practice at multiple levels of an educational system. This approach elaborates McLaughlin's (1987) notion of mutual adaptation between the intended policy and the context of implementation by enabling us to understand why a policy was adapted in particular ways and not others in the course of implementation. Furthermore, this approach goes some way towards substantiating Spillane et al.'s (2006) contention that situation and social context fundamentally shape how human cognition affects policy implementation.

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Footnotes

[1]Indicators that a group has become a community of practice include a joint enterprise or mission, an established set of norms, and a shared technical repertoire (Cobb, McClain, Lamberg, & Dean, 2003; Wenger, 1998). In the educational policy and leadership literature, it is common for any group of people who meet on a regular basis to be called a community of practice. In these instances, communities of practice appear to be brought into existence by what Grossman, Weinberg and Woolworth (2001) termed the fiat of the researcher's pen. The question of whether a particular group has evolved into a genuine community of practice is one that needs to be addressed empirically.

[2]Analyses of organizational routines in the educational policy and leadership literature often treat a series of weekly or monthly meeting as an organizational routine without identifying a pattern of interdependent actions. As Feldman and Pentland (2003) make clear, frequency of enactment is not a defining characteristic of an organizational routine. In our view, it is important to substantiate the claim that an organizational routine has been identified by specifying both the recurrent pattern of actions and the multiple actors involved.

[3]Wenger (1998) discriminates between people's participation in activities and their use of reifications or tools as two distinct types of supports for learning. The supports that we have discussed thus far emphasize targets' participation in various types of activities, often with someone who has already developed relatively sophisticated practices. Attention to tools rounds out the taxonomy of supports for policy implementation.

[4]In the policy literature, the term tool is sometimes used more broadly to include conceptual tools such as a set of core principles for high-quality instruction. However, conceptual tools of this type are whats rather than hows of policy. In our view, it is more productive to treat them as learning goals rather than supports for learning. For example, the goal of a district policy might be that principals will come to use a particular set of instructional principles as a conceptual tool when they observe classroom lessons and give teachers feedback. Our decision to restrict our focus to material tools is pragmatic and reflects our concern to develop a taxonomy of supports for policy implementation.

[5]These artifacts of practice are tools that professional development providers use to support the participants' learning.

[6]Recent work in teacher education indicates that a time frame of two to three years might be appropriate for teachers to develop ambitious instructional practices with adequate support (Cochran-Smith & Lytle, 1999; Grossman & McDonald, 2008).

[7]A more detailed account of these phases can be found in Henrick, Cobb, and Munter (2010).

[8] We did not share our recommendations with district leaders about how they might improve their policies until May of each academic year. When we interview district leaders in the fall, they have already begun to implement their instructional improvement policies and are not in a position to make major adjustments. We therefore wait until the end of the academic year before sharing findings, when district leaders are about to develop their plans for the subsequent year. This approach also allows us to present empirical evidence to support our recommendations for revising policies.

[9]The working relationship between the two departments improved significantly during the third year of the larger study after the head of the Leadership Department changed and a member of the Curriculum and Instruction Department moved to a senior position in the Leadership Department.

Table 1

Analysis of District B's designed means of support for principals' learning (i.e., the how of the policy)

Taxonomy of Supports for Learning		**District B Supports for Principals' Learning**
New Positions or Changes in Responsibilities of Existing Positions	Expert guidance	Mathematics coach
	Sharing responsibilities	
Learning Events	Intentional—ongoing	
	Intentional—discrete	Monthly principal meetings
	Incidental	Weekly meeting between the principal and coach
New Organizational Routines		Learning walks
New Tools	Tools in intentional learning events	Examining student work in monthly principal meetings
	Tools in practice	Curriculum maps

Table 2

Comparison of principals' intended and actual practices as instructional leaders

The 'What' of the Policy for Principals as Instructional Leaders: *Principals will support and hold teachers accountable for developing high-quality instructional practices.*	
Intended Principal Practices	**Actual Principal Practices**
1a) Observe instruction and provide feedback.	Principals regularly observed and provided feedback. However, feedback focused on easily observable elements of instruction and did not communicate expectations for instructional improvement consistent with district's goals.
1b) Providing relevant feedback requires that principals develop a relatively sophisticated vision of high-quality mathematics instruction in order to distinguish between strong and weak instruction.	Although the majority of principals developed visions that were compatible with the goal of the improvement effort, their visions were not sophisticated enough to support them to distinguish between strong and weak instruction.
2) Conduct learning walks with coach to determine the nature of assistance teachers need.	Principals occasionally took learning walks; only one principal reported conducting learning walks with a coach.

3) Work with the coach to ensure that the coach is providing appropriate professional development at the school.	Principals and coaches met regularly. However, there was little evidence that they worked together to plan professional development.

Table 3

Recommendations for improving the how of the policy and the district leaders' subsequent revisions

Recommendations for Improving the How of the Policy	**District Leaders' Revisions to the How of the Policy**
Accountability Relations with Leadership Directors	
Address the tension that principals experience between improving the quality of instruction in the long-term and raising students' test scores in the short-term.	Increased emphasis on Leadership Directors' expectations for principals, on how they should communicate those expectations to principals, and on how they should support principals' development of instructional leadership practices. Leadership Directors and principals will conduct Learning Walks together. Leadership Directors will meet with principals (and coaches) during weekly Instructional Leadership meetings at schools.
Clarify what principals should hold teachers accountable for teachers, and how principals should communicate those expectations. This requires the coordinated efforts of the Offices of Curriculum and Instruction and Leadership.	
Supports for Principals' Learning	
Provide sustained professional development (i.e., ongoing intentional learning events) focused on	Principal meetings will include ongoing intentional learning events specific to the mathematics curriculum and to

recognizing high-quality mathematics instruction and offering feedback specific to the inquiry-oriented text.	recognizing high-quality mathematics instruction. However, no support was planned on providing useful feedback on instruction.