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Measuring the Learning-Centered Leadership Expertise of School Principals

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We as a field believe that school principals can acquire new expertise by participating in principal preparation and professional development programs; however, we have few methodologies to measure leadership expertise, especially expertise that links leadership to improved student learning. In this article, we present the results of a study that examines two instruments for measuring leadership expertise, principal surveys and open-ended scenarios. First we make the case regarding the need for measurements of expertise. Next we discuss the conceptual definitions of expertise in general and present the specific domains of leadership expertise we attempt to measure. Finally, we present the results of a study that implemented two measures of leadership expertise: principal surveys and open-ended scenarios. The descriptive statistics, correlations, and examples we present in this article offer mixed results regarding the strengths and weaknesses of the various methods to conceptualize and measure leadership expertise.

The bulk of research on school leadership has examined leadership roles and functions, paying only limited attention to leaders' expertise (Knapp, Copland, & Talbert, 2003; Leithwood, Seashore Louis, Anderson, & Wahlstrom, 2004). However, leadership is contingent on expertise (Barnard,

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1938). Principals are more likely to improve student achievement if they have the expertise to engage in key leadership functions and roles related to improving student achievement. Practitioners use their expertise more or less effectively to change, improve, or respond to their work environments (Anderson, Reder, & Simon, 1997; Borko & Livingston, 1989; Lampert & Ball, 1998). Knowledge and expertise are also key mediating factors between professional development and principals' practice; what practitioners learn from professional development depends in part on what they already know, their prior knowledge, as well as on new knowledge they've learned. However, it is difficult to evaluate the impact of professional development programs without robust measures of leadership expertise and knowledge.

Throughout this article we use the term "expertise," acknowledging that the term covers a broad terrain including problem solving and competencies. Leadership expertise goes beyond *what* a leader knows to *how* to apply that knowledge successfully in a given situation. Given the varied research and definitions for this topic, we use the general term "leadership expertise" and define it as the knowledge that informs an individual's practice or activities as he or she leads a school. While such knowledge is separate from the actions themselves (other factors may also influence what an individual finally does), it nonetheless offers a primary guide to his or her practice. We qualify this term more in depth later in the article and discuss the primary definitions of expertise that have informed our use of the term.

We as a field believe that school principals can acquire new expertise by participating in principal preparation and professional development programs; however, we have few methodologies to measure leadership expertise, especially the leadership expertise that links leadership to improved student learning. To make the connection between leaders' expertise and practice more explicit, it is necessary to develop valid and reliable ways of conceptualizing and measuring leadership expertise. In this article, we present the results of a study that examines two instruments for measuring leadership expertise, principal surveys and open-ended scenarios. First we make the case regarding the need for measurements of expertise. Next we discuss the conceptual definitions of expertise in general and present the specific domains of leadership expertise we attempt to measure and third, we present the results of a study that implemented the two measures of leadership expertise: principal surveys and open-ended scenarios. We follow the work of Camburn and Barnes (2004) and rely on triangulation as a way to validate measures, supporting the view that "multiple methods enhance the validity of research findings by overcoming the weaknesses or bias in each method" (p. 51). At the onset we acknowledge that our work is preliminary both conceptually and empirically. Our goal is to wrestle with the complexity of the issues and to explore the utility of our approach.

THE NEED

There is little debate regarding the centrality and importance of the school principal in initiating and sustaining school improvement. Although various paradigms are used to describe the nature of the principal's role from distributed leadership to principal in charge, the importance of the role has not been questioned (Goldring & Rallis, 2000; Spillane, 2006). Consistent with the importance of the role is the increasing emphasis on the need for high-quality preparation programs and professional development opportunities for school principals (Levine, 2005; Tucker & Codding, 2002). Scholars and policy makers, along with public and private foundations, have spent considerable resources on school principal development. However, it is difficult to measure the impacts of these efforts.

From an evaluation standpoint, we need measures of leadership expertise to study the efficacy of leadership development programs. The research on *outcome*s of preservice preparation, induction, and professional development is virtually nonexistent (Smylie, Bennett, Konkol, & Fendt, 2005). Most of the literature on preservice programs, for example, is highly descriptive, noting the dearth of research on program outcomes. Studies of professional development for school leaders typically rely solely on satisfaction measures as an indication of outcomes (McCarthy, 1999). We posit that one of the reasons behind the relatively weak evaluation base of outcomes of school leadership development is the lack of available measures of leadership expertise. How can program implementers and evaluators know if leaders are developing and learning if there are not valid, accessible measures? Relying solely on student outcome measures is problematic because the influence of the school principal on student outcomes is believed to be mostly indirect, mediated by a host of other variables (Hallinger & Heck, 1996).

Theoretical and empirical work about the relationship between principals' expertise and leadership practice also is limited (Smylie et al., 2005). Hence, making connections between leaders' expertise and those key practices and conditions needed for school improvement is difficult with the extant literature. Yet, these connections are essential for understanding the ways in which school leadership can contribute to improvement in student achievement. Despite the widespread adoption of the Interstate School Leaders Licensure Consortium standards (Murphy, 2003; Murphy & Shipman, 1999), and a more solid research base about school leadership roles and practices that support student learning, we still know very little about the knowledge and expertise school leaders need or bring to their work in order to practice in ways that contribute to school improvement (Heck & Marcoulides, 1991). Nor do we have sufficient understanding about how leaders use knowledge to work with and through others to improve their schools.

Figure 1 presents our hypothesized conceptual model of the interrelationships between expertise and practice as they relate to student learning.

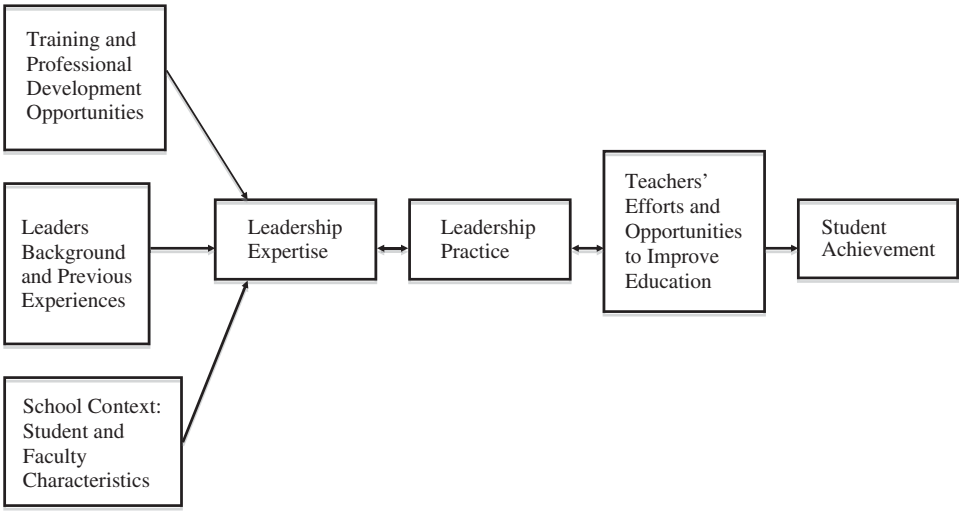

FIGURE 1 Conceptual framework.

According to this model, a school leader's background (such as prior experiences), training and professional development experiences, and larger school context influence the expertise that he or she develops for leading a school. That information in turn guides the leader's actions to organize and support teachers through such actions as developing teacher opportunities for collaboration and other opportunities to improve their teaching. As we demonstrate with bi-directional arrows, teachers' efforts and opportunities along with the leader's practices can in turn inform the leader and influence his or her expertise in return. This article focuses on the left-hand portion of the model as we explore leaders' expertise and its relationship to other factors, specifically principals' years of experience and teacher reports of leadership practices in their schools.

THE NATURE OF PRINCIPAL LEADERSHIP EXPERTISE

Recent research on leadership expertise in education draws from a number of different areas such as cognition and cognitive theory. Leithwood and Steinbach have offered a basic summary of expertise as the following:

a. the possession of complex knowledge and skill,
b. its reliable application in actions intended to accomplish generally endorsed goal states, and
c. a record of goal accomplishment as judged by others in the field (1995, p. 13).

Expert leaders, then, not only possess the necessary knowledge and skills to complete their jobs, but they also demonstrate their abilities to employ

these skills and information successfully in their jobs over a period of time. Leithwood and Steinbach's definition demonstrates the difficulty of evaluating expertise: measures that simply ask a principal to state what he or she knows may not capture what he or she would do in a real situation or how he or she would apply particular concepts.

The nature of expertise and its development is complex. Learning, or the acquisition of expertise, generally can be divided into two categories: procedural knowledge, meaning that a person is now able to do something better than he or she could do it before; and declarative knowledge, meaning that the person now possesses knowledge he or she previously did not possess, the evidence being that the person can say what it is that he or she (now) knows (Anderson, 1983). Anderson argues that "one of the key factors in human intelligence is the ability to identify and to utilize the knowledge that is relevant to a particular problem" (1983, p. 86) or, to paraphrase, it is not just what you know but how you use it. The distinction can also be summed up simply as knowing "how" (procedural) versus knowing "that" (declarative) (Ryle, 1949). Of course, for expertise to be useful, one must be able to apply it, recognizing the conditions under which it can be effectively used and why. The challenge, of course, is that procedural knowledge is often tacit, inarticulate, and automatic—making it explicit so that others can acquire it is difficult. However, learning that fundamentally changes an individual's practices requires both declarative and procedural knowledge—one must learn not only *what* to do differently but *how* to successfully implement the new declarative knowledge. These processes do not evolve in isolation; changes in each one influence the other through a combination of iterative processes. Unfortunately, much professional development focuses primarily on declarative knowledge in that it often takes place away from settings of practice and only rarely engages leaders in their places of work.

Another specific way that educational leadership expertise can be conceptualized is in terms of articulable Tacit Knowledge (aTK) versus explicit knowledge (Richards & Busch, 2005). As opposed to more basic "how to" knowledge that one can verbalize (for example, "let me tell you how I found my keys"), Richards and Busch's explicit knowledge is a technical, academic type of knowledge that is easily described in formal language. "Explicit knowledge is technical and requires a level of academic knowledge or understanding that is gained through formal education, or structured study" (Smith, 2001, p. 315). Tacit knowledge is "non-codified, disembodied know how that is acquired in the informal take-up of learned behavior and procedures" (Howells, 1995, p. 2). Articulable Tacit Knowledge is knowledge that can be "articulated for practical and competitive reasons" within an organization (Richards & Busch, p. 1).

Researchers on organizations stress the importance of tacit knowledge for organizational effectiveness. Tacit knowledge is a type of knowledge with which shared frames of reference can be applied to determine "the

way work is really done" (Smith, 2001, p. 316), and making tacit knowledge explicit not only helps to share it between individuals but also examine how best to improve it. Leithwood and Stager (1989) cite Schon (1987) in arguing that tacit knowledge is most powerful when it is made explicit and shared between individuals:

> When practitioners respond to the indeterminate zones of practice by holding a reflective conversation with the materials of their situations, they remake a part of their practice world and thereby reveal the usual tacit processes of worldmaking that underlie all their practice. (p. 6)

This is also a prominent point in Argyris and Schon's (1978) work on organizational learning. As central figures in their schools, educational leaders possess a significant amount of tacit knowledge unique to their schools that they can use and share in the successful organization of their staffs and student bodies to improve teaching and learning.

There are few methodologies in the literature to measure aTK beyond work done by Sternberg and colleagues. Sternberg and colleagues use scenarios in "situational judgment tests," where respondents write a plan of action or respond to a number of possible responses to a situation using a Likert scale (extremely bad to extremely good; Sternberg, 1991; Torrff & Sternberg, 1998). These tests use practical workplace incidents for which the best response may not draw from knowledge of preset, explicit procedural rules, and for which the best response may even contradict formal, explicit knowledge. Rather, the best response may come from information or knowledge an individual has learned from his or her work or overall experience. Responses on these tests have been scored by (a) correlating scores with an index of known groups (e.g., novice and expert), (b) judging the extent to which responses conform to professional guidelines, or (c) comparing a response to an expert prototype (Sternberg & Grigorenko, 2001).

At the core of the works discussed thus far lies a distinction between types of knowledge that are more or less relevant to practice. The study of "expertise" has borrowed heavily from these distinctions in an effort to identify holders of the knowledge that influences behavior and actions. Ericsson, Charness, Feltovich, and Hoffman's (2006) definitions of "expert" and "expertise" illustrate the conceptual overlaps with the work just reviewed. They describe an expert as

> one who is very skillful and well-informed in some special field . . . someone widely recognized as a reliable source of knowledge, technique, or skill whose judgment is accorded authority and status by the public or his or her peers. Experts have prolonged or intense experience through practice and education in a particular field. (2006, p. 3)

Expertise refers to "the characteristics, skills, and knowledge that distinguish experts from novice and less experienced people" (p. 3). Implicit in these definitions are the tacit or procedural knowledge discussed above: experts possess a larger amount of more practical, field-specific knowledge that enables them to complete their work skillfully. They not only possess specialized knowledge and skills, but they can also use or apply them successfully in their work.

In terms of school leadership expertise, earlier research has focused mainly on the extent and nature of differences in problem solving processes between "expert" school administrators and their more typical colleagues (Leithwood & Stager, 1989; Leithwood & Steinbach, 1993; Leithwood et al., 1992). This work suggests that expert problem solvers differ from routine building managers in several ways, including the nature of their goals, the strategies they use to influence schooling, and their decision-making processes (Leithwood, Begley, & Cousins, 1992). Expert school principals, for example, are better able to regulate their own problem-solving processes, analyze and clarify problems more easily, focus more of their energy on the goals to be achieved through problem solving, and are more sensitive to both task demands and the social contexts within which tasks are to be solved (Leithwood & Stager, 1989; Leithwood & Steinbach, 1995). More recent work, building on this tradition, found some evidence that supports some of these differences in expertise but not others for expert, novice, and aspiring school principals (Brenninkmeyer & Spillane, 2003; Spillane, Weitz White, & Stephan, in press). This work also found that both expert and typical principals used more tentative language and strategies when discussing math as compared to literacy, raising questions as to other conditions that may influence the problem-solving skills that a principal employs in a given situation (Brenninkmeyer & Spillane, 2003).

More recent work suggests that the expertise necessary to lead improvement in instruction is also likely dependent on "leadership content knowledge." Leadership content knowledge in this regard has been used to describe subject matter knowledge of school leaders such as mathematics. This term lies at the intersection of subject matter knowledge and leadership knowledge, including knowledge of the subject matter, knowledge of how children learn the subject matter, and how teachers can assist that learning (Stein & Nelson, 2005). Though little research for novice/expert differences has been conducted in this area, this expertise is theoretically much more dependent on domain-specific knowledge (such as subject matter) than is problem-solving expertise.

A final, perhaps equally important aspect of leadership expertise is the content of school leadership for propelling student learning, often referred to as "learning-centered leadership" (Murphy et al., 2006). This includes expertise in areas such as standards-based reform, monitoring instruction for improvement, data-based decision making, and others—knowledge not isolated to any specific subject matter taught in schools but essential for

leaders to improve teacher instruction and student achievement in their schools as a whole (see Eubanks & Levine, 1983; Goldring & Berends, 2008; Heck, 1992; Leithwood & Jantzi, 2005; Murphy et al., 2006). Learning-centered leadership expertise steps beyond subject matter content and problem-solving skills to encompass the broader organizational knowledge that a leader possesses and employs to organize a school around the goal of improving instruction and student achievement.

Understanding of expertise in the field of education leadership is in its infancy compared to similar work on teacher knowledge and expertise (Hill, Schilling, & Ball, 2004; Shulman, 1986, 1987). The purpose of this article is to explore the implementation of self-report surveys and vignettes (scenarios) to measure learning-centered leadership expertise to further the development of the conceptualization of leadership expertise for school principals.

METHODOLOGY

This article is part of an ongoing research project of a professional development program for school principals. The program is a district-level strategy that is designed to improve student achievement by arming principals with the knowledge and skills needed to lead instructional improvement efforts in their schools. A total of 48 principals were included in the sample. Among the 48 principals, 28 were in elementary schools, 10 in middle schools, six in high schools, and four were in alternative/special education schools. We view the fact that all the principals in this study come from one district as a strength in that it holds the district context and district-level policy context constant, though we acknowledge that our ability to generalize from these data is limited. This sample included all principals in the district except principals who were members of the district leadership team who were declared to be ineligible for the study since they were delivering the principal professional development to other principals in the district.

As can be seen in Table 1, even though all schools were located in the same urban district, there was substantial variation in their demographic characteristics. The average student enrollment for the schools of the 48 principals was 644, though the standard deviation of 301 indicated a

TABLE 1 Characteristics of the Schools of 48 Principals.

Demographic characteristic	Mean	Standard deviation
School size	644	301
Percent Black	67%	26%
Percent Hispanic	3%	4%
Percent free/reduced lunch	59%	21%

substantial range across schools. On average, the schools of principals had an African-American enrollment of 67 %, although the standard deviation of 26 % indicates a broad range of student ethnicity in schools.

Data Collection

Three different collection methods were used in this study: a principal self-report survey, a teacher self-report survey, and open-ended vignettes given to the principals. We discuss these measures according to two main areas of interest: those used to measure expertise itself (items from the self-report surveys and the vignettes) and those used to examine relationships between expertise and other characteristics and conditions (such as principal background and principal activities).

Measures of expertise

Each principal completed a written principal survey during the spring. Of primary interest for this study are the items that measured principals' perceived expertise. The survey items were based on a revised and adapted version of *The School Leadership Self Inventory* (National Policy Board for Educational Administration, 2000), a self-reporting inventory consisting of Likert-scale items based on the ISLLC standards for school leadership. The original inventory includes items relating to the content of each of the six ISLLC standards (e.g., Articulates a vision of student learning for the school community, Supports a school culture focused on student learning). The items to measure leadership expertise read as follows: "This question asks about your knowledge in a variety of areas of school leadership. For each area please indicate the degree to which you believe your current knowledge reflects personal mastery (knowledge and understanding of the area)." The stem then read, "To what extent do you currently have personal mastery (knowledge and understanding) of the following:" The choices were a 5-point scale: a little, some, sufficient, quite a bit, or a great deal. This instrument was used in another study (Goldring & Vye, 2004) to study changes in principal knowledge of a professional development program for school leaders. In that study this instrument was pilot tested and revised after extensive psychometric considerations, including factor analyses and reliability analyses; all of the original subscales yielded reliability measures of 0.72 to 0.90. In the current study, some of the items were revised to better reflect the professional development curriculum and learning-centered leadership. The domains of leadership expertise measures in this study include knowledge about standards-based reform, data-based decision making, and knowledge about principles of teaching and learning in classrooms. In all, six domains of learning-centered leadership expertise were measured

TABLE 2 Principal Self-Report Survey Domains, Sample Items, and Alpha Reliabilities for the Principal Self-Report.

"To what extent do you currently have personal mastery (knowledge and understanding) of the following?"
1. Standards-based reform, 0.876
What students should know and be able to do at each grade level in mathematics
Aligning instruction, assessments and materials
2. Principles of effective teaching and learning, 0.840
Effective instructional practices in mathematics
Evidence-based practices for intervening with struggling students
3. Data-based decision making, 0.866
Different types of assessments
Evidence-based procedures for assessing struggling students
4. Developing a school learning environment, 0.877
Methods for creating learning cultures
Elements of school design
5. Monitoring instructional improvement, 0.829
Benchmarking procedures for monitoring teachers
6. Community-stakeholder involvement, 0.874
The conditions and dynamics of the diverse school community
Successful models of school, family, business, community, government, and higher education partnerships

on the surveys. The set of scales along with illustrative items and reliability coefficients are presented in Table 2.

Self-report measures such as this are subject to a number of limitations. First, this survey reflects the perspective of only one individual in the school regarding the school conditions and the principal's characteristics and abilities. Second, this survey is certainly vulnerable to self-report bias, in which principals may report results that are self-serving. We nonetheless include this survey to examine the relationship between principals' self-perceptions, their responses to the scenarios described below, and teachers' reports of school conditions and principal characteristics.

Scenarios

To examine expertise some of the same constructs measured in the principal survey were also measured using brief school-related problem scenarios or vignettes. All principals responded to open-ended scenarios. Appendix A provides the text of the three scenarios analyzed in this article. The scenarios were modeled after Leithwood and Stager's (1989) scenarios and Brenninkmeyer and Spillane's (2004) scenarios. The scenarios were all designed to be ill-structured problems to take advantage of Leithwood and Stager's (1989) finding that ill-structured problems differentiated experts from typical administrators. We designed the scenarios to be as open as possible to increase the opportunities for the principals to detail the expertise that they might use in addressing the question posed in the scenario. Furthermore, the scenarios

were mostly focused on instructional improvement situations and in some cases were school subject matter specific. Principals wrote narrative responses to the problems posed to them in the written scenarios. The principals responded in an open-ended format. While principals could vary the amount of time they devoted to any one scenario, a proctor reminded them every nine to 10 minutes that so much time had elapsed and they should be moving to the next scenario. Overall, the average number of words written per scenario was 84.8, ranging from 115.7 to 71.9, though length of response was not correlated with the placement of the scenario (first or last).

The scenario responses were coded by three independent raters to determine the extent to which there was evidence that expertise was brought to bear in the responses around each of the measured domains. A coding manual was developed based on a careful analysis of the content of the professional development curricula materials and a learning-centered leadership focus. In terms of specifying key constructs for expertise, we used common descriptive terms across instruments. Thus independent coders applied the domain codes to principals' scenario text that were similar to or the same as those used by the principals to judge the degree of their own expertise in the principal survey (see Appendix B). In addition to a definition of the domain and design rules about when to use its code, examples of text to which the code would be applied were also included in the manual (see Appendix B).

Coders were instructed to double-code when necessary, that is, to assign two or more codes where necessary to the same text. The first step in the coding process involved independent coders coding data from four assistant principals. After discussion and training among three coders using practice data from assistant principals, a consensus was reached that the codes were being applied consistently. Further, the coding manual was revised to include more precise decision rules as to when to apply a particular code. The three coders then coded the entire school principal data set independently. Half of the responses, selected randomly, were double-coded by two of the coders working independently. Agreement among the two independent coders ranged from 63% (Code 7) to 98% (Code 10) and using Fisher's Exact Test of Significance, agreement was significant for all 10 codes (see Table 3).

For the purposes of this article we focus on three areas or domains of expertise (standards-based reform, data-based decision making and monitoring classroom instruction) from the three scenarios that correspond to similar areas of expertise on the principal survey. A total of ten codes were used to denote key areas of expertise—standards-based reform, coaching, data-based decision making, effective teaching and learning, monitoring instructional improvement, professional development and adult learning, collaborative strategy, school learning environment, distributed leadership, and community involvement. In later work we will examine the other areas of expertise that we do not examine here.

TABLE 3 Fisher's Exact Test of Significance for Agreement Between Raters of Scenario Responses.

Domains Used to Code Scenarios	% Agreement	Significance
Standards-based reform	64.2%	.001
Coaching	81.7%	.003
Data-based decision making	85.0%	.000
Effective teaching and learning	73.3%	.000
Monitoring instructional improvement	91.7%	.000
Professional development and adult learning	85.0%	.000
Collaborative strategy	63.3%	.000
School learning environment	71.7%	.000
Distributed leadership	90.8%	.000
Community involvement	97.5%	.001
Miscellaneous	90.0%	.001

Measures of other characteristics and conditions

To further explore principal expertise, we analyze additional principal and teacher survey measures. First, we examine a principal's amount of experience in an effort to explore if more experienced individuals demonstrate a higher level of expertise. Previous findings show a complex relationship between experience and expertise. In Wagner and Sternberg (1985) and Wagner (1987), the researchers found significant differences in the scenario responses according to broader group memberships (business manager, business graduate student, and undergraduate—these groups differed significantly in their average years of experience). Differences here included individuals' application of strategies to job-related conditions such as improving customer relations or navigating sales agreements. Later, Williams and Sternberg (unpublished) scored responses to work scenarios and were able to identify differences in individuals' tacit knowledge according to membership in low-, middle-, and upper-management groups—these groups again differed in their average years of experience. However, when looking at differences in tacit knowledge within the groups they did not find that experience was significantly related to experience. Furthermore, researchers such as Leithwood and Stager (1986, 1989), who looked more closely at school leadership expertise, have not found significant relationships between years of experience and expertise. In light of these mixed findings and the wide range in participants' years of administrative experience (range = 1 to 29 years), we include data about school leaders' experience by measuring the number of years each principal has worked as an administrator.

Second, a School Teacher Survey measured teacher perceptions of the principal. Following the conceptual model presented in Figure 1, we hypothesize that there would be a positive relationship among principals' levels of learning-centered expertise and their teachers' reports about

the-school conditions that are related to instructional leadership. All teachers in the principals' schools responded to a detailed survey at the same time that the principals responded to their surveys. The average response rate for the teacher survey was 87% (N = 2070).

In the teacher survey we included items about in-school conditions that are associated with leadership that improves student achievement. Such conditions include a rigorous curriculum (Carter & Maestas, 1982; Murphy et al., 2006; Newmann, 1998), teaching focused on ambitious academic content (Brophy & Good, 1986; Knapp, Shields, & Turnbull, 1999), and a culture of learning and professional behavior characterized by collaboration and trust between colleagues (Bryk & Driscoll, 1988; Lee, Smith, & Croninger, 1995; Louis, Marks, & Kruse, 1996). We structured the questions on the survey to measure teachers' perceptions of their principals' knowledge of and practices to influence these key conditions in their schools. The multiple-item scales included the following: teachers' report of their principal's understanding of principles of effective teaching and learning (a three-item scale with α = 0.92); and teachers' reports of principal leadership practices in the areas of developing a professional learning community (a six-item scale with α = 0.92), monitoring instructional improvement (a five item scale with α = 0.85), developing and communicating instructional goals (a six item scale with α = 0.93), and building a climate of trust and support (an eight-item scale with α = 0.91). The stems for these two types of questions were the following:

1. "Please mark the extent to which you disagree or agree which each of the following:
   The principal at this school . . ." (This then listed a number of activities and practices with 5-point Likert scale responses of "strongly disagree, disagree, agree, strongly agree").
2. "Please mark the extent to which you disagree or agree which each of the following:
   The principal at this school has a strong understanding of . . ." (This then listed a number of activities and practices with 5-point Likert scale responses of "strongly disagree, disagree, agree, strongly agree").

We also asked teachers to report the extent to which they engage in data-based decision-making (an eleven item scale with α = 0.92), collaborate with other teachers (a ten item scale with α = 0.86), align standards with school programs (a six-item scale with α = 0.94). We hypothesized that teachers whose principals self-reported or demonstrated greater expertise on the self-reports or scenarios would report their principals participating in these same practices more frequently in their schools.

Analyses

We analyze responses from principals to the scenarios using HyperResearch, a software program for analyzing qualitative data. Through HyperResearch we were able to retrieve text, the qualitative data, and triangulate it with the quantitative survey codes by matching principal ID numbers. Thus, we examine the relationship between a principal's self-reports on the survey and his or her vignette responses. We triangulate the survey measures of expertise with the coded scenario in terms of looking at correlations among the codes across the two instruments. For example, do principals who report that they have more expertise in data-based decision making on their self-report survey use this strategy in their responses to scenarios more frequently than principals who report less expertise in this area?

We ask to what extent the measures of expertise correlate in the expected direction with experience. Do principals who report that they have more expertise in data-based decision making or other areas of expertise have greater experience? Then, we look at the correlations between expertise and teacher reports of principal practice, such as the level of data-based decision making. Examination of the teacher responses is particularly important following the triangulation perspective mentioned above. Inclusion of the teacher survey data offers us a perspective on principal practice not subject to administrators' self-report bias. Systematic bias in principals' responses on their surveys, such as overrating their knowledge and practice on the principal survey, may influence the results and therefore including teacher data is important.

RESULTS AND DISCUSSION

We first turn to the scenario data to explore measures of expertise in responding to the open-ended vignettes. We use a contrasting case approach to provide examples of responses of a principal with high levels of expertise compared to a less knowledgeable principal on three of the specific coded areas of expertise: standards-based reform, data-based decisionmaking, and monitoring classroom instruction. High and low levels of expertise were determined by the coders, that is high frequency use of the code in one scenario.

Standards-based reform

In one scenario we asked principals how to handle a faculty disagreement over continued use of a math program that has had mixed results. A logical answer to this problem would be to discuss standards-based reform. Fifty-two percent of the respondents had no mentions of this area of expertise, or

code, 24% had one mention, and the remaining principals had between 2 to 4 mentions.

Respondents were asked to respond to a scenario about implementing a relatively new math curriculum with a strong research base, but teachers are getting frustrated that it is "not working" (See Appendix A, Scenario 2). Consider two responses below: The first was coded as a highly expert response, with a frequency code of 4 and self-rated expertise on the principal survey of 4, whereas the second is a less expert response, despite the respondent's self-rating of his/her expert higher than the first respondent:

> *Curriculum, instruction, and assessment must be aligned in order for students to do well on tests. Analysis of test data would be a starting point in determining if the math program was at fault. What areas were weak and were these adequately taught following the math program? Data analysis of subgroups (poor/at-risk students) would shed additional light on this topic. If the curriculum aspect is okay, does the math program provide sufficient guided instruction and practice for the students? If not, could it be supplemented or does it need to be replaced? Are the assessments used to measure student progress aligned with the standardized test with regard to common language, format, etc.? Are students prepared for the grade level when they begin use of the math program? Do they need review, additional time and instruction? Before the math program is "thrown out," the causal factors must be examined.* (Frequency of code = 4; Expertise in standards-based reform as self-reported through principal survey, 4)

While a low expertise response is:

> *First of all, one must consider the population students that are being instructed and an assessment should be given to students. AFTER receiving the results supplemental instructional materials should be used for instructional purposes.* (Frequency of Code = 1; Expertise, 4.75)

These two responses differ in a number of ways. Most striking, the first respondent demonstrates more specified knowledge of standards-based reform compared with the second respondent. This is evident in the various aspects of alignment that respondent 1 considers, including alignment of assessment with the mathematics program and instruction. Further, respondent 1's response demonstrates rather specific strategies for using standards-based reform in practice whereas respondent 2 does not demonstrate any such knowledge these strategies—respondent 2's strategies are broader and more generic. Interestingly, respondent 2 is a case of a principal who appears *not* to know what she does not know, as she has rated herself more highly than her response warrants.

Data-based decisionmaking

Another scenario asked the respondents to address a situation in which the principal provided individual student test results to teachers for each of their incoming classes and after the faculty meeting, several of the teachers expressed frustration with the limited usefulness of these test data (see Appendix A). Only 13% of principals had no mentions of data-based decision making in their responses to the scenario, while 11% had one mention and the remaining respondents had 2–8 mentions of data-based decision making in their responses.

One principal mentioned data-based decision making 8 times in response to this one scenario. Further, she rated her mastery of data-based decision making as high, 4.5 on a five-point scale on the principal survey. In response to this scenario she wrote:

> *State testing is one benchmark a school looks at to measure strengths and weaknesses. Student progress throughout the year on other assessments is just as important. Teachers need to look at their own teacher-made assessments and what they are showing as compared to the state tests. The staff has to make connections that the objectives the test measures are directly related to the concepts and standards that they are teaching so the tests are a good way to analyze their students' understanding. Looking at other assessments should give teachers the insight in how to plan for their students. Teachers need to be trained to look at all the data and plan lessons based on the findings. More collaboration in each subject area with an in-depth study of the results and looking at the sub areas can give them good information. I would provide professional development opportunities to allow teachers to find a comfort level with using test scores to impact their teaching and planning their lessons.* (Frequency of Code = 8; Expertise, 4.5)

Contrast the principal above with that of another principal who only used data-based decision making three times and rated her own mastery on data-based decision making somewhat lower (3.5).

> *Provide teachers with a common planning time to go analyze the data for their classroom and come up with questions for improvement among the grade level. They will then need to analyze the entire school test data and develop a plan for improvement.*

> *Each teacher will develop their professional plan for improvement for the year based on their test results. Overall school goals and objectives should be designed around the needs of students. Continuous assessment of student progress and articulation with and among teachers will drive student achievement.* (Frequency of code = 3; Expertise, 3.5)

Comparing the responses of these two principals to the same scenario we notice four differences that we hypothesize differentiate them on their level of expertise with respect to data-based decision making. First, the second principal does not question the reliance on a single data source on student achievement to make decisions. While she mentions continuous assessment, she appears to work on the assumption that one data source is adequate. In contrast, the first principal explicitly points out the need for multiple sources of evidence when making decisions, noting *"state testing is one benchmark a school looks at . . . Student progress throughout the year on other assessments is just as important . . . Teachers need to look at their own teacher-made assessments."* A second factor that differentiates the level of expertise is that the first principal appears to be aware that different sources might offer contrary evidence—*"Teachers need to look at their own teacher-made assessments and what they are showing as compared to the state tests."* This suggests a level of expertise not demonstrated by the second principal, who does not entertain the possibility that data from different sources might suggest different or even contrary conclusions. A third aspect that distinguishes these two responses is that while principal 1 appears to understand that teachers need training in order to be able to interpret test data, principal 2 either assumes teachers have had this training or that no special training is necessary. A fourth difference that also points to a higher level of expertise in the first principal is that she is aware that tests may provide poor evidence of students' understanding if they are not measuring what teachers are teaching and it is important for teachers to know this—*"The staff has to make connections that the objectives the test measures are directly related to the concepts and standards that they are teaching so the tests are a good way to analyze their students' understanding."* The second principal says nothing to indicate this sort of knowledge.

Monitoring instructional improvement

One of the scenarios asks how the respondents would handle a situation where the teachers do not like principals and vice-principals regularly visiting classrooms, discussing student work and providing feedback, commenting, "When I close that classroom door, how I teach is an individual decision. I will come to you if I need something" (see Appendix A, Scenario 5). In response to this scenario, 68% of the respondents had no mention of monitoring instructional improvement, and another 17% had one mention, while the remaining principals had 2–6 mentions of monitoring classroom instruction in their responses. Again we present two contrasting cases. The first respondent received a frequency code of 6 for monitoring instructional improvement and rated her/himself as highly competent, with a score of 5 on the principal survey.

> *I have encountered this situation many times before because I believe in monitoring instruction carefully. Over my 25-year career in education, I have found that too often what doesn't get monitored doesn't get done. I have also found that a consistent, viable curriculum does not get implemented to ALL students without monitoring by the instructional leadership.*
>
> *My efforts have always been to first try to bring everyone on board through discussion of the importance of collaboration and monitoring what we do through quantifiable data and observation. I have found that the majority of teachers will ultimately understand this and, if you work with them in a supportive manner, will not have a problem with administrators who are strong instructional leaders and are very much a part of the instructional process. In fact, they have a great respect for those leaders. There will always be a few members of the faculty who don't want to be monitored and I have found there is usually a good reason for this! Monitoring usually reveals some areas those teachers need to work on. It is then the responsibility of the administration to try to work with them to improve. Ultimately, an instructional leader must be willing to do whatever is necessary to ENSURE that quality teaching and learning are occurring in every classroom. That may involve counseling some teachers out of the profession or helping them find another career in which they can be more successful. I believe our biggest failure in education has been a fear of taking a stand and being honest about teachers who are not effective. We KNOW that the key to success for students in the classroom is a good teacher. Due to politics, personal fear, and sometimes laziness, administrators do not always ensure that every child has a good teacher.* (Frequency of Code = 6; Expertise, 5)

The next response is from a lower-expertise response and lower-perceived expertise:

> *I would let them know that we are all held accountable for what goes on behind closed doors, that it is the responsibility of the administrator to monitor what is being taught in the classroom. I would inform them that the state curriculum must be followed.* (Frequency of Code = 1; Expertise, 4)

We note that the principal in the first response embraces the idea of the need for monitoring instruction, acknowledging or anticipating the difficulties often encountered with this role while establishing the importance of quality classroom instruction. The second response relies on a seemingly authoritarian role to instructional improvement.

Clearly there is variability in the responses to the same scenario, suggesting different levels of expertise. Of course, a principal's description of particular strategies or concepts in responding to a scenario is only a rough

gauge of his or her expertise. Mentioning standards-based reform or data-based decision making in addressing a problem is an indication that the respondent has some expertise in standards-based reform or data-based decision making. However, respondents' expertise in standards-based reform or data-based decision making can differ substantially in terms of depth or sophistication. It is possible that a respondent knows something about standards-based reform but his or her knowledge is wrong or incorrect.

Our preliminary analyses of these data suggest some patterns. Our qualitative analysis of the scenario responses suggests substantial differences in principals' levels and depth of expertise, indicating at a minimum that some principals are better able, or more competent in articulating, their expertise about standards-based reform, data-based decision making, and monitoring instruction. The results also suggest that principal responses differ on at least two dimensions: a) specificity of their response (i.e., how specific their response is vis-à-vis the particular area of expertise, and b) sophistication or depth (i.e., response demonstrates a level of understanding that goes beyond a generic description of the strategy).

Next, we are interested in exploring the relationship between the level of knowledge as indicated by the responses to the scenarios (frequency of use of the three specific codes on each of the three scenarios) and the principal self-reports of these same areas of expertise (data-based decision making, standards-based reform, and monitoring instruction) as reported on the self-reported principal survey.

On average principals scored themselves as having "sufficient" to "quite a bit" of expertise in the different domains we measured (see Table 4). Principals scored themselves lowest on developing a school learning environment and community-stakeholder involvement (both had averages of 3.57, or "sufficient") and highest on monitoring instructional improvement with an average of 4.09 or "quite a bit." Variation in responses across the areas was quite similar, with standard deviations ranging from 0.69 for expertise in effective teaching and learning to 0.87 for developing a school learning environment—given the rating scales of 1 to 5 for these items these standard deviations indicate a broad range in responses from principals. Based on their self-reports, principals felt they knew the least about

TABLE 4 Mean and Standard Deviation of Expertise Scales in Principal Survey.

	Mean	Standard deviation
Community-stakeholder Involvement	3.57	0.83
Data-based decision making	3.85	0.80
Developing school learning environment	3.57	0.87
Monitoring instructional improvement	4.09	0.79
principles of effective teaching & learning	3.67	0.69
Standards-based reform	3.81	0.82

developing schoolwide learning communities and involving key community leaders in school processes and functions, while they possessed "quite a bit" of expertise in monitoring teachers' instruction and any improvements in their teaching.

We found no meaningful or significant correlations between the code of expertise on the scenarios and self-reported knowledge/expertise of that domain on the principal survey (data not shown). The correlations ranged from a low of –0.251 to a high of 0.264. "Using" an area of expertise by way of mentioning it in response to a scenario tells us little about the level of expertise as self-reported and vice versa. The qualitative analyses of frequency of mentions do suggest that scenarios can illicit responses regarding the depth and specificity of articulable knowledge. Moreover, a principal could mention data-based decision making multiple times in response to a scenario but not report s/he has an understanding of what that entails on a survey.

Experience

We turn next to explore the relationship between experience and self-reports on expertise. The first step was to examine the correlations between the self-report expertise measures from the principal questionnaire and principal years of experience. We would expect that the correlations between all the scales of perceived expertise and years of experience to be positive and significant; principals with more years of experience should have more expertise and have higher levels of self-reported expertise. As presented in Table 5, the correlation between expertise and years of experience are all positive and the patterns of correlations generally correspond to our expectations, although one of the correlations is not significant. Principals with more years of experience self-report more knowledge of learning-centered leadership components (or the converse, those with more expertise have more years of experience).

TABLE 5 Correlations Between Expertise and Principal Years of Experience.

	Years as administrator
Areas of expertise	
Standards-based Reform	0.28*
Principles of effective teaching & learning	0.27*
Data-based decision making	0.27*
Developing school learning environment	0.25*
Monitoring instructional improvement	0.23
Community-stakeholder involvement	0.37**

*$p < 0.10$.
**$p < 0.05$.

Admittedly, a better criterion for assessing the validity of a measure is a measure from a different method of data collection. "With a single method one cannot distinguish substantive (i.e., trait) variance from unwanted method variance, because each attempt to measure a concept is contaminated by irrelevant aspects of the method employed" (Bagozzi, Yi, & Phillips, 1991, p. 421). As we mentioned previously, triangulation is very important in exploring the utility and validity of measures. Thus, we correlated the self-reported expertise of principals with teacher reports regarding the frequency of relevant leadership and school practices (see Table 5). This analysis is important because it could support the notion that the link between principal leadership and student achievement is through working with teachers (Hallinger & Heck, 1996). In other words, we expect that principals who know something, such as knowledge about data-based decision making or standards-based reform will be most likely to act upon that expertise (procedural knowledge) and this will in turn impact teacher behaviors (as indicated by teacher reports on surveys).

Table 6 shows the correlations between teacher reports of principals' practices and principals' self-reports of their perceived expertise in related areas. Although the correlations in Table 6 are not high, there are some interesting patterns. There are significant correlations between principals' self report of standards-based reform and teachers' reports of principals' actions to align standards and school programs (r = 0.27). Principals who self-report that they have more expertise in teaching and learning are also more likely to have their teachers indicate that they have more expertise

TABLE 6 Correlations Between Self-Report Expertise and Teacher Measures of Leadership Practices.

	Teacher report of leadership practices			
	Principals of effective teaching	Data-driven DM	Align standards & school programs	Monitoring instructional improvement
Areas of Expertise				
Standards-based reform	0.23	0.22	0.27*	0.13
Principles of effective teaching & learning	0.27*	0.20.	0.23	0.28*
Data-based decision making	0.18	0.28*	0.27*	0.17
Developing school learning environment	0.03	0.03	0.14	0.06
Monitoring instructional improvement	0.14	0.14	0.19	0.11
Community-stakeholder involvement	−0.05	0.08	0.12	0.11

*$p < 0.10$.
**$p < 0.05$.

in this area and that they monitor instruction more frequently in their schools.

We note two other confirmatory findings from this table, the significant correlations between principals' expertise in data-based decision making and teachers reports of frequency of data-based decision making ($r = 0.28$) and between aligning standards and school programs according to teacher reports and principals' expertise in standards-based reform ($r = 0.27$). In other words, principals who self-report that they have more expertise in data-based decision making work in schools where teachers are likely to indicate there is more data-based decision making happening at the school and principals who report that they have higher expertise in standards-based reform are more likely to have teachers indicate that there is more alignment of standards and school programs in their schools. Of course, it could be that teachers and schools who use data attract principals with expertise in data-based decision making. These descriptive results (which are very exploratory in nature) cannot address the direction of these relationships.

One area where there is not the expected relationship is between principals' expertise in monitoring instruction and teachers' reports of the frequency of monitoring instruction ($r = 0.11$), although there is a correlation between principals' expertise in teaching and learning and teacher reports of monitoring instruction ($r = 0.28$). Overall, these mixed relationships between principal self-reported expertise and teacher-reported practice provide some evidence of the connection between expertise and practice, but questions remain. First, self-reports of expertise are certainly open to a self-report bias. Second, these results leave open the question that factors others than expertise (such as school conditions) may influence a principal's practices. As we discussed in our introductory definition, a leader's possession of expertise may not guarantee that he or she will act entirely on that knowledge.

Finally, we examined the relationships between the scenario responses and two other areas: (1) principals' years of experience and (2) teachers' reports of their principals' expertise in the three areas we've discussed (standards-based reform, data-based decision making, and monitoring instructional improvement). We found only one significant correlation between principals' years of experience as administrators and their scenario responses for monitoring instructional improvement ($r = 0.23$, $p < 0.1$). There were no statistically significant correlations between principals' scenario responses and teachers' reports of their expertise (data not shown). Only principal responses regarding monitoring instructional improvement supported our hypothesis that principals with more experience would demonstrate a higher level of expertise, and we did not find any relationships between scenario responses and teachers' reports of their principals' expertise.

CONCLUSIONS

The purpose of this article is to begin a discussion around the measurement of leadership expertise and knowledge. We assert that this is necessary for the evaluation of programs, such as professional development, but it is also an integral step in further understanding how principals enact leadership in their schools. There has been much empirical research that links principal leadership to school conditions that support learning. For example, Heck, Larsen, and Marcoulides found: ". . . the principal's role in establishing strong school climate and instructional organization is precisely the area that strongly predicts school achievement" (1990, p. 117). The question remains, *what are the mechanisms, or how do* school leaders work to establish the communities of practice that can impact school climate, instructional organization, and ultimately student learning? What principals do, and how they do it, depends in part on what they know. Hallinger and Murphy (1987) suggested decades ago that principals need to have knowledge of curriculum and instruction. The missing link, however, is what knowledge—procedural and declarative—is critical for school principals to practice in ways that enable instructional improvement? What expertise do principals need to have to improve their schools—how is this knowledge acquired and how is it connected to their practice? We assert that work in the area of understanding school leadership expertise can help develop hypotheses about how leaders work with others to impact teaching and learning. We hypothesize that leaders with more expertise and knowledge will be able to work with and through others to improve their schools. "New knowledge is created when people transfer and share what they know, internalize it and apply what they learned" (Smith, 2001, p. 318).

Our analyses suggest that in terms of scenarios, there are differential responses to a common prompt that suggest different levels of expertise. A rudimentary first step is obtained by a principal's articulation in terms of "amount" (frequency) of mentions that go along with a concept. However, these scenario responses did not correlate with principals' self-reported expertise on a principal survey in the same domains of expertise (standards-based reform, data-based decision making). There are a number of possible explanations. Perhaps the two methods are really measuring different constructs; perhaps the scenario method is more dependent on a respondent's written communication skills than on his or her leadership expertise. Perhaps the self-report measures are not reliable, as each principal has a different metric as to what they consider expertise. Our preliminary qualitative analyses did seem to suggest that frequency of mentions served to represent two dimensions of "articulable knowledge," specificity and depth, with the scenarios. But it is also the case that more systematic qualitative analysis of our scenario data may show that simple frequency of mentions captures only surface "understandings" and thus is not a sound predictor of depth or

sophistication of knowledge. However, there is emerging evidence that the self-report measures of expertise are, at a minimum, correlating with measures of principal practice in the expected direction. For example, principals who indicate higher expertise in data-based decision making work in schools where teachers are indicating there is more data-based decision making.

Given that the principal survey measures and scenarios measure of leadership expertise are not correlated, we are beginning to question what the scenarios and surveys are actually measuring. For example, there is no correlation between the strength of the code for using data-based decision making expertise from the scenario and teacher reports about the amount of data-based decision making in their schools. Together these findings suggest that the scenarios are measuring something else—either because of the method or our interpretation, conceptualization, or the coding of the data. If the scenarios do indeed measure articulable tacit knowledge, knowledge that can be articulated for practical reasons, these findings raise questions about the links between articulable tacit knowledge and actual practice. It may be that self-reports of principal expertise is related to notions of declarative knowledge and that declarative knowledge is associated with leadership practice.

The descriptive statistics, correlations, and examples we have presented in this article are a first step in examining the strengths and weaknesses of various methods to conceptualize and measure leadership expertise. Our analyses offer a starting snapshot of these measures, but further examination is needed to evaluate their utility. There are most likely tradeoffs among various methods. Maybe self reports are better at tapping a kind of "tacit" procedural knowledge that is especially difficult to articulate in a simulation (like a scenario), or maybe using both kinds of measures, scenarios and self-reports, offer two complimentary views that together give us more information than either can alone. Disagreement across the two kinds of instruments may be more informative than agreements.

A priority in future analyses will be to tease out the influences that different methods have on the results: just how does the use of surveys affect principals' and teachers' reports as opposed to principals' responses to scenarios? The initial picture presented does not specify the nature or extent of influence that different methods may have on results. We offer this reflection as a recommendation for others to consider in the future as they work with larger datasets of school leaders and others; such an approach would help to address more closely just how much different methods may bias participant responses and how much they can help to determine the validity of different constructs of leaders' practice. Clearly, the field still has much to do to understand how to measure leadership expertise.

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APPENDIX A

Scenario (coded for standards-based reform)

Four years ago, a new math program was adopted at your school. The math program was chosen because independent research had shown it to work. Over the past few years, math scores on standardized tests have not improved significantly. The math scores of poor students have decreased slightly.

Many of your best teachers are convinced that the new mathematics program is excellent and should be kept. But other teachers are frustrated. A few teachers tell you that they think that the math program is at fault. Others admit that they are starting to use "whatever works," rather than following the math program.

Question: How would you address this situation?

Scenario (coded for data-based decision making)

For several years now you have been presenting your school's state test results to your faculty at one of the early faculty meetings. You also provide individual student test results to teachers for each of their incoming classes. After the faculty meeting, several of your teachers expressed frustration with the limited usefulness of these test data. "Those standardized tests can't really capture the reading and writing process," complained Mr. Magnolia, the leader of your English department.

"These results give me a general picture of the needs of my students in broad categories, like number sense and algebraic thinking, but they don't really help me with what I should focus on in my lessons. This is particularly true for students who need extra help," concurred Ms. Wisteria, a

respected mathematics teacher. You would like to make more use of these and other student performance data.

Question: How would you address this situation?

Scenario (coded for monitoring classroom instruction)

For over a year now, you and your assistant principals have monitored instruction regularly, reviewed teachers grading of students works, and provided them with regular feedback on their classroom performance. Many teachers have openly opposed your efforts—in faculty meetings and other public venues—believing that classroom teaching is a private matter best left to teachers. Comments such as this one are common: "When I close that classroom door, how I teach is an individual decision. I will come to you if I need something."

Question: How would you address this situation?

APPENDIX B

Focus Domains for Analyzing Principal Scenarios

Standards-based reform

Definition: includes any responses in which the principal mentions, expresses or demonstrates some knowledge of ANY of the following:

- Standards-based reform or standards (e.g., curriculum standards, content standards, learning standards, performance standards, etc.)
- Curriculum design, implementation, evaluation, and refinement
- What students should know and be able to do at any grade level in any school subject (especially mathematics, reading, and writing)
- Alignment in general, alignment in reference to any guidance instruments (e.g., student assessment, curriculum standards, professional development, curricular materials, etc). and alignment of instruction, assessments, and materials.
- Systemic reform as it relates to standards or curricula
- Systems theory as it relates to standards or curricula
- The political, social, cultural, and economic systems and processes that impact schools

Principle 3 in the professional development states: "The best results come from having an aligned instructional system. The principal as instructional

leader is chief architect of learning environment of school—ultimately responsible for aligned instructional system." Further, understanding performance standards for each grade is a learning objective in the professional development curriculum.

Example

> *First of all, whether the science program works or not should not be the question. The question should be: What are the standards and objectives in Mathematics I want all students to master by the end of their respective year of instruction? After this question is answered, then you look at the instructional strategies that need to be implemented and that is done with input from all teachers and math specialists. Once that is done then the possible math programs and textbooks would be looked at as supplemental materials to help in the daily instruction.*

This example should be coded as standards-based reform for a number of reasons. The principal mentions standards explicitly. However, even if this principal had not mentioned standards explicitly, this would still be coded under standards-based reform because the principal (a) mentions implementation, (b) implies aligning learning objectives with instructional strategies and with curricular materials, (c) expresses some understanding of the important role that grade-level learning objectives fill in standards-based reform.

Data-based decision making

Definition: includes any responses in which a principal mentions, expresses or demonstrates knowledge of ANY of the following:

- Information sources, data collection, and data analysis strategies
- Different types of student assessment (e.g., using portfolio and other qualitative methods of assessment, using formative/diagnostic as well as evaluative, and so on)
- Data (e.g., student achievement data, local demographic data)
- Data-based decision
- Evaluation and assessment strategies
- Evidence-based procedures for assessing struggling or low-achieving students

Even if a principal does not use the word "data" explicitly, this code may be relevant. The core idea for this code is systematically collecting and analyzing information instead of merely asking individuals for their opinions.

Examples

> *The very first thing that we would do is inspect the data to find out why the scores are declining.*
>
> *Inspection of the practices at the more successful schools will help.*
>
> *Science scores need to be analyzed within and across grade levels to determine areas of strength and weakness, and also to determine what individual students are not meeting the standards.*
>
> *I would observe the instruction of teachers whose students' scores are declining and would analyze the work of these students.*

Each of these examples would be coded under data-based decision making. In example 1 the principal proposes to inspect data in order to determine why achievement scores are dropping. In example 2, while there is no mention of data, the principal proposes to inspect practices at successful schools, to gather data about practice. Moreover, the implication here is that these data would be then used to make decisions about practices in the principal's school. Example 3 refers specifically to student's achievement scores in science. In example 4, the principal proposes observing instruction (collect data) and analyzing the work of students (collect and analyze data) in classrooms where student achievement is declining.

Monitoring instructional improvement

Definition: includes any responses in which the principal mentions or demonstrates knowledge of ANY of the following:

- Benchmarking: setting teacher performance levels and evaluating teacher progress toward those
- Procedures for monitoring teachers
- Observing a teacher who was trying new instructional practices or using new curricular materials
- Monitoring the curriculum used in classrooms to see that it reflects the school's improvement efforts
- Monitoring classroom instructional practices to see if they reflect the school's improvement efforts

Although the word "monitoring" is not always used explicitly, the idea of charting any academic progress—through systematic classroom observation or other means—is sought for this coding category.

Examples

> *I would make sure teachers were aware of the evaluation process and of our intention to closely monitor the academic progress of students.*
>
> *I would first determine if the new science program was even being used by teachers. To do this I would drop in on classrooms to observe on a regular basis, and would have my science specialists do the same.*

In example 1, there is an explicit reference to monitoring—"intention to closely monitor." In example 2, although the word monitoring is not used, this is clearly what the respondent intends. The respondent proposes to monitor science teaching to see if a new science program is being used in the classroom.