CAREER: Data-Driven Instructional Systems—
Accessing How School Leaders Develop Local Capacity to Influence Instruction

Project Summary

Intellectual Merit

The ideal of instructional leadership in schools is the ability to change teaching and learning in intentional directions. Recent federal school reform efforts, such as the No Child Left Behind Act (2002), seem to assume that this ability is in ready supply. However, both experience and research suggest that it is the rare educational leader who is able to negotiate the local tangle of tradition and politics to successfully improve learning for students. Local leaders in many schools find their efforts to improve student learning thwarted by preexisting structures, conflicting priorities, and limited resources. Achieving the goal of improving learning for students in all schools means that we need to be able to understand and represent what successful school leaders know and do. The proposed study will develop new methods and use new technologies to access, represent, and communicate successful instructional leadership practices for all leaders.

Purpose and Research Questions

A leader's ability to influence learning intentionally in schools is mediated by a complex, interconnected system of people and practices. I propose the concept of *data-driven instructional systems* (DDIS) to describe this interconnected system of curriculum, pedagogy, professional development, and assessment practices that leaders build to improve student learning. The purpose of the proposed study is to understand the knowledge, experience, structures, and practices local school leaders bring to bear in designing and implementing a local DDIS. The first phase of the study will be to identify a number of urban and rural schools engaged in the process of designing an DDIS. The study will then follow the efforts of teachers and district and school leaders to establish and manage their local DDIS. Three research questions will guide the study:

1. What are the key components of an DDIS, and how do they interact?

2. How do school leaders design and implement an DDIS to shape the practice of teaching and learning?

3. How can we represent the design and implementation of an DDIS so that other interested practitioners may enhance their leadership practice?

Broader Impacts

The findings, insights and recommendations from this study will have broad impact for practitioners and researchers. The second phase of this study will build on insights gleaned from work with successful practitioners to develop principled, case-based, multimedia representations of complex practices to serve as rich learning opportunities for aspiring leaders. These cases will be developed and disseminated in collaboration with state practitioner organizations in order to improve leadership for learning in all schools. The study will also contribute to how we think about the relationship between leadership, school reform, accountability, and leadership preparation. These findings will be disseminated to the education reform and leadership community through journal articles, conference presentations, and a project Web site.

CAREER: Instructional Data Systems—
Accessing How School Leaders Develop Local Capacity to Influence Instruction

Project Description

Proposal Overview

This proposal describes a career development plan designed to integrate my research and educational interests in developing practical knowledge to support successful K-12 school leadership. The proposal integrates several of my research interests into a coherent effort to access, document, and communicate how successful school leaders improve learning for students. Each of these phases involves a separate set of research and educational activities. *Accessing* leadership practice involves ethnographic investigation of how leaders frame and solve problems in the social and situational context of their schools. *Documenting* leadership practice involves developing methods and theories to design complex multimedia cases that portray the rationale of practice in local contexts in ways intelligible to interested practitioners. Finally, *communicating* leadership practice involves testing the pedagogical potential of these cases through methods such as user testing, course work, and professional development. The purpose of this proposal is to present a career development plan that combines these strands of research into a single trajectory that makes sense both as a research program and as an educational journey.

In the remainder of this section, I first describe the need for a new understanding of the knowledge that guides the practice of successful instructional leaders. The occasion for the research project is to investigate how several school leaders are successfully engaging in the daunting task of reshaping their school culture to meet external accountability demands. I then discuss and develop an analytic framework—the *instructional data system* (IDS)—that I suggest leaders use as a means to reshape their schools' instructional practices and outcomes. My methodology section then follows the three stages of research described above, illustrating how I plan to access, document, and communicate the wisdom of practice uncovered through an investigation of the IDS. I then present a work plan for carrying out the research and highlight how the goals of this research reflect the goals of my department and my school. Finally, I describe my previous research and educational experiences that are relevant to the successful undertaking of this project and conclude by providing brief background on the researchers who have agreed to serve as members of the project's advisory board.

Relationship of Research to Current State of Knowledge

Research on school reform clearly demonstrates that lasting changes in teaching and learning in schools require effective local leadership. Understanding and communicating the knowledge that guides successful leadership is thus a key to improving learning for students in all schools. I begin my argument for this study with a selective review of the existing research on capacity and school reform to explain why leadership matters in efforts to improve student learning in schools. I then offer a brief review of research on school leadership to illustrate our current understanding of the ways in which leaders exert their influence on schools, and conclude with a discussion of how we know what leaders know.

Capacity and Intentional Change

Improving learning for all students has risen to the forefront of recent public policy interests in schools and schooling. School reformers and legislators alike have pushed for, and have largely received, an accountability revolution that increasingly holds public schools responsible for improving student achievement. Attaining the required student learning gains depends, however, on the local conditions for improving student learning (Newmann & Wehlage, 1995; Elmore 2002). *School capacity* describes the collective ability of a school community to implement structural and cultural changes that improve the practices of teaching and learning in their schools (Newmann, King,

& Youngs, 2000). For Youngs and King (2002), this school capacity exists in the interrelation of principal leadership, technical resources, professional community, program coherence, and teacher knowledge, skill and disposition (see also Cohen & Hill, 1998; Darling-Hammond, 1998; Kruse & Louis, 1995; Newmann, Smith, Allensworth, & Bryk, 2001; Corcoran & Goertz, 1995; Smylie & Hart, 1999). The presence of these characteristics in a school provides a powerful resource for local efforts to improve student achievement.

The current policy and political climate, however, pushes schools to move beyond this generic form of capacity to focus on developing measurable practices that will allow them to intentionally alter instruction to satisfy mandated test score standards for all students. This press to use student improvement data as a lever to change teaching and learning in schools is typified by the recent federal No Child Left Behind Act (NCLB; 2002). NCLB aims to reinforce a national high-stakes accountability system that uses student performance on standardized state tests to gauge the annual yearly progress in learning for all students. Although there is considerable controversy about the value of using standardized state tests as a vehicle to promote systemic improvements in student learning (see, for example, Amrein & Berliner, 2002; Haney, 2000; Black & Wiliam, 1998), many local school leaders do not have the luxury of distancing themselves from the legislation through debate. Their schools need to learn how to transform their local capacity to intentionally improve test scores.

The NCLB legislation assumes that external accountability pressures alone will create the specific kinds of internal capacity necessary for schools to intentionally improve instruction. This no small assumption. Abelmann and Elmore (1999) found that schools already have internal accountability structures—such as teacher and student reputations, grading, and tracking—and that the disconnect between these existing accountability structures and the new, external structures can lead to confusion and selective implementation. Participants in cultures organized around internal accountability measures resist mandated external change and often lack the knowledge to change the culture that shapes their practice. Elmore (2002) noted that the push for accountability may actually discourage constructive action to improve because local practitioners may not know how to meet high standards. Yet meeting the NCLB requirements requires that schools not only make state standardized test data available and meaningful to teachers, but also engage in the more daunting task of creating a "culture of accountability" to improve classroom learning according to the dictates of external accountability measures (McCary & Peel, 1997). Altering existing cultures of accountability in schools requires significant local effort and considerable local knowledge.

Leadership and School Change

Given the federal mandate that schools show measurable learning gains for all students, the responsibility for developing and maintaining the capacity to improve teaching and learning falls mainly to local school leaders. Research suggests that improving student learning in schools depends on strong leadership (Hallinger & Heck, 1998). Pinning down what we mean by *leadership* is difficult, however, because of the variety of tasks and actors involved in leading a given school. The *tasks* through which leaders establish the conditions for improved student learning vary considerably. Local and district leaders can build capacity to change teaching and learning through a variety of practices, among them a shared vision of instruction, collective responsibility for student success, and legitimate incentives for teachers to improve their practice (Bryk & Driscoll, 1985; Newmann & Wehlage, 1995; Odden & Kelley, 2002). The *source of leadership* in schools varies as well. Although principal leadership is critical in establishing the capacity to improve teaching and learning (Liberman, Falk, & Alexander, 1994; Kruse & Louis, 1995; Rosenholtz, 1989; Sheppard, 1996), teachers also lead through their participation in professional communities within the school and in

external professional networks (Huberman, 1995; Talbert & McLaughlin, 1994; Little, 1993). District staff can also lead through selective staff hiring, the development of educative policies, and the provision of targeted professional development (Ball & Cohen, 1996; Spillane, 2000, 2002).

Taken together, these tasks and sources of leadership provide rich potential for instructional change in schools. However, the presence of these practices and participants does not, by itself, guarantee the establishment of a coherent system of practice that can change instruction in predicable ways. Schools engaged in multiple, parallel innovations may have difficulty pulling together in a given direction. These "Christmas tree" schools (Bryk et. al., 1998) challenge school leaders to create coherence from fragmented professional and instructional cultures. Similarly, leaders wedded to a variety of goals and practices may work at cross-purposes in striving to effect change in their schools. Thus, simply listing relevant leaders and successful leadership practices will not satisfy the goal of accessing the knowledge that matters in improving schools; we also need to understand the kind of *coherent* instructional program that is essential for improving school effectiveness (Newmann et al., 2001). Accessing how school leaders create coherence in their instructional programs means going beyond identifying the key aspects of leadership practice to showing how leaders weave, for example, accountability demands, professional community, teacher evaluation, and parental involvement into a manageable system that can produce predictable results in student learning.

In this study, I will adopt a *distributed perspective on leadership practice* (Spillane, Halverson, & Diamond, 2001). Distributed leadership provides a means to trace how a coherent system of leadership practice emerges in schools. Several aspects of a distributed perspective suit this study. First, leadership is defined as engaging in tasks that establish the conditions for improving teaching and learning in schools. Identifying leadership with tasks suggests that leadership extends beyond positional leaders in schools to include all who participate in activities that improve teaching and learning, from staff members to teachers to students. This approach also suggests that those in leadership positions may not behave as leaders, but instead may act as powerful obstacles to efforts to improve teaching and learning in intentional directions. Second, a distributed perspective draws on research in distributed (Salomon & Perkins, 1993) and situated cognition (Lave & Wenger, 1991) to show how leadership tasks are enabled and constrained by the situation of practice. Capturing the interaction between people, tasks, and situation is critical to an understanding of how leaders negotiate between their given circumstances and new challenges in creating coherent systems that support new practices.

Methods of Accessing What Leaders Know

Leaders require many forms of knowledge to guide their work in local capacity building. Recently, researchers have focused on refining durable technical knowledge to guide the work of local school leaders. This research has resulted in abundant models and techniques for building local instructional capacity. For example, research on effective schools (e.g., Purkey & Smith, 1983; Taylor, Pressley & Pearson, 2000) guides school change by highlighting the characteristics of successful schools. Other research focuses on the development of specific aspects of the school system, such as teacher evaluation practices (Danielson & McGreal, 2000), the development of professional community in schools (Kruse & Louis, 1995; Bryk & Schneider, 2002), or teacher compensation structures (Odden & Kelley, 2002) as vehicles for reshaping schools. Comprehensive school reform models (e.g., Success for All or New American Schools) package a number of techniques as a systemic model for promoting school change. Administrative training programs have also tried to incorporate new standards, such as the Interstate School Leaders Licensure Consortium (ISLLC), into their efforts to shape the practice of aspiring leaders.

From the perspective of practice, however, linking these often complex techniques and programs into a meaningful, manageable system presents real challenges. Leaders interested in improving local school capacity often find it difficult to determine where to start and how to manage multiple components as a system. Further, since schools do not exist in vacuums, local leaders must understand how to negotiate existing situational and cultural constraints in order for capacity building efforts to achieve intended results. Adjusting intended and unintended consequences of interventions moves the tasks of school leadership from the implementation of a list of key programs to the intentional development and management of complex systems of practice (Halverson, in press).

The effort to share successful practice is further complicated by the difficulty in accessing and communicating what successful leaders know. Research suggests that such practical knowledge is largely tacit and embedded in local practices and structures (Dunne, 1993; Hutchins, 1995; Hiebert, Gallimore & Stigler, 2002; Halverson, 2002b). One of the goals of my research is to develop principled methods of making practical knowledge of successful school leadership usable and available in terms that local school leaders can understand. Communicating practical knowledge requires that researchers move beyond the identification of characteristics of leaders and leadership to document and represent how these characteristics coexist in the actual practice of school leaders. Representations of the practical knowledge that guides school leaders as they, for example, successfully implement complex reform programs must encompass the typical constraints and opportunities of the situation that are often remain unstated in the accounts of experienced practitioners. Decontextualizing practical knowledge into generalizable principles, a valuable practice in traditional research, eliminates the preconditions for understanding the complexities of successful leadership practice for change. Prior work in problem-based learning for school leaders points toward how to embed challenges in authentic, real-world contexts (Bridges & Hallinger, 1999; Robinson, 1997). Helping school leaders develop the ability to apply knowledge appropriately in their work thus requires access to rich, problematic examples of contextualized practical knowledge to guide their practice.

Project Objectives and Significance

The aim of this research is to access, document, and represent the complex systems that successful school leaders create in order to effect change in schools. I propose the concept of an *instructional data system* (IDS) to refer to the network of assessment, teaching, and fiscal and curricular practices that leaders build and refine to influence teaching and learning in schools. The concept of an IDS helps to integrate the various tools available to school leaders into a single entity, providing a valuable occasion to investigate how leaders create coherent instructional programs in schools. A key outcome of this research will be to understand (a) how school leaders determine the relevant tasks for creating an IDS and (b) who takes the responsibility to engage in these tasks. Understanding how leaders create an IDS means both uncovering the rationale that guides their practice and tracing how the component parts come together, either intentionally or serendipitously, to reinforce one another and influence teaching and learning. Studying the IDSs that result from such efforts provides an avenue to communicate how instructional practice can be changed and a flexible resource for subsequent challenges to the instructional environment.

Although schools are bound by the components of larger district, state, and federal IDSs, in this research I choose to study how local school leaders create functional IDSs. This perspective considers the district and federal components as contextual aspects of the local school community. This study considers how local leaders choose to integrate, marginalize, or ignore these contextual components in their local IDSs. District-mandated improvement-planning processes can end up on the shelf in some schools while providing coherence to reform efforts in others. Focusing on the individual

school level allows us to compare how different leaders recognize and use different aspects of their situations to constrain or enable local initiatives.

An IDS has several key components:

1. An *assessment* component to provide both summative and formative data on student achievement;

2. A *technological* component to collect and distribute information about students, teaching, and learning;

3. A *professional learning* component to provide opportunities for teachers to develop, reflect on, and adjust their practice;

4. A *curricular* component to alter what is taught to fit the needs of student learning and assessment; and

5. A *fiscal* component to reward practices and outcomes judged worthwhile to the school community.

Simply having the components of an IDS in a given school does not guarantee a manageable system of practice. In a rudimentary IDS, the components may be a collection of practices rather than a coherent instructional system. For example, in many schools the use of formative assessment data is disconnected from summative student achievement systems (Black & Wiliam, 1998), and professional learning opportunities are disconnected from student learning (Corcoran, 1995; Darling-Hammond, 1998) or from the school's incentive system (Odden & Kelley, 2002). Additionally, the professional learning component of an IDS may simply mean that teachers are left on their own to shape instructional practices to successfully meet accountability standards. Thus, the mere presence of the components of an IDS does not necessarily imply that teachers and leaders will be able to use them as a system to improve instruction. Further, the components or even the existence of the IDS may not be apparent to practitioners or researchers.

The coherence of an IDS is measured by the degree to which it may be adapted to achieve desired changes in outcomes. Given the present policy climate, I plan to study the components and organization of IDSs that can adapt to new demands to improve student learning. A coherent IDS would include a variety of control and feedback mechanisms designed to make connections between the often disparate components of the instructional process. Take as an example a school with a coherent organization among the components of its IDS (for more detail, see Halverson, in press). The school's assessment system was collaboratively designed by leaders and teachers over several years to centralize information on multiple measures of student performance, such as descriptive information on attendance and discipline, grade-level achievement testing, portfolios of student work, and other locally developed formative measures. These data were incorporated into a professional development program that linked assessment data to (a) reflective conversations on teaching and student learning and (b) the collaborative design of and experimentation with curricula that would improve student learning. Finally, a school improvement plan linked professional development, curriculum development, and assessment programs to the school's discretionary funding activities.

There are several features to note about the IDS described above. First, a viable link to student achievement data provides critical feedback on efforts to improve student learning (Darling-Hammond et al., 1993; Lachat & Williams, 1996). The link from achievement data to professional development helps teachers understand what students are learning, the link to curriculum informs what is taught, and the link to school improvement planning helps the community decide what is worth rewarding. Second, the coherence of the IDS system makes it difficult to know where to start

investigating. Did teachers and leaders incorporate student achievement data into a tradition of reflective practice? Did the school always reward collective goals? Tracing the knowledge that sparked a system whose components evolved together is a key challenge for researchers.

A coherent IDS is not self-organizing. Instructional leaders play a key role in the development, coordination, and implementation of an IDS. It is important to note, however, that being a successful school leader is not synonymous with building the perfect IDS. The relative novelty of the mandated challenge of constructing coherent systems for intentionally improving learning for all students will strain most school leaders' capacity to develop appropriate solutions. The story of how leaders set and solve problems that lead to the construction of an IDS will provide insight into how leaders understand the constraints and possibilities of their work, as well as examples to help aspiring leaders grapple with the emergent problems of practice.

Research Purpose and Research Questions

This proposal offers a research plan to access, document, and communicate the practical knowledge of how local school leaders develop IDSs to improve teaching and learning. The following three questions will guide the study:

1. What are the key components of an IDS, and how do they interact?

2. How do school leaders design and implement an IDS to shape the practice of teaching and learning?

3. How can we represent the design and implementation of an IDS so that other interested practitioners may enhance their leadership practice?

Research Methodology

The research plan proposed here is designed to make the complexity of leadership practice visible to researchers and interested practitioners. The IDS framework serves as an vehicle to access, document, and communicate complex leadership practice. This section describes the selection of study participants and the processes of data collection and analysis.

Participants

Because the proposed project will focus on how leaders develop successful IDSs, site selection will be a critical first step. I plan to select four primary or middle schools within short driving distance of the University of Wisconsin–Madison (UW-Madison) for two reasons. First, the curricular and faculty organization of primary and middle schools, as compared with that of high schools, seems to lend itself to a greater range of manipulation by leaders. Although in subsequent stages of this research I plan to investigate whether the findings extend to the challenge of high school reform, at this stage I plan to focus exclusively on K-8 schools. Second, the intensive ethnographic work necessary to understand how leaders create IDSs in schools and the small size of my research team led me to limit the number of schools involved in the study and their distance from the university.

I will use several sources of information to select participant schools:

1. *Student achievement data*. I will use student achievement data available through the Wisconsin Department of Public Instruction to select schools that have demonstrated a recent pattern of improving student achievement according to performance on the Wisconsin Knowledge and Concepts Examinations (WKCE). The relatively recent demand to demonstrate improvement in state test scores suggests that school leaders will be actively engaged in the initiation and adoption stages of IDS development.

2. *Nominations*. I will solicit nominations of school leaders with reputations for improving student achievement from a variety of state organizations such as the Association of Wisconsin School Administrators, the Wisconsin Department of Public Instruction, and the Wisconsin Education Association Council.

3. *Wisconsin Leadership Academy*. I will draw on my ongoing collaboration with the annual Wisconsin Leadership Academy, a Gates Foundation effort designed to identify and instruct school leaders engaged in the process of building IDS components in their schools.

4. *Wisconsin Center for Educational Research.* I will work with researchers Norm Webb (Advisory Board member) and Sarah Mason to learn the identity and characteristics of urban schools they have worked with to improve student learning through integrating data analysis into the instructional process.

After compiling a list of possible sites, I will contact the schools to determine whether they are willing to participate in the study. To address the NSF goal of integrating diversity into research, I will give priority to identified schools with significant student and community populations of underrepresented minorities.

Data Collection

Data will be collected in several distinct phases. The first year of the study will establish the history and interaction of the IDS components. We will develop a preliminary account of the IDSs by (a) conducting interviews with school leaders; (b) administering a survey to members of the school community on IDS component interaction and the effects of IDS components on classroom teaching and (c) assembling a documentary history to understand IDS development and component interaction. Once the districts and schools have been identified, the first research task will be to identify and interview the key personnel involved in designing each IDS. Because school leadership roles and functions reach beyond the principal (Heller & Firestone, 1995; Ogawa & Bossert, 1995; Pounder, Ogawa, & Bossert, 1995), it is necessary to study the practice of other formal and informal school leaders, such as assistant principals, curriculum specialists, reading or Title 1 teachers, and lead teachers. Each practitioner will be interviewed according to a protocol designed to uncover the theories of action (Halverson, 2003) that motivated their design efforts and to identify the key artifacts that shape the IDS.

In the 2nd and 3rd years of the study, leadership practices in the selected schools will be studied intensely through naturalistic observations and semi structured interviews. Researchers will spend an average of one day per week in each school observing and shadowing leaders, teachers, and community members. We will select some days for observation based on noteworthy school activities; others will be randomly selected to experience more typical school days. We will also observe meetings and school events connected with the operation of the IDS. During this phase of the study, we will strive for "thick description" (Geertz, 1973) to refine our working conception of an IDS and to develop a series of working hypotheses about how the IDS shapes instructional practice. In addition to interviewing the leaders themselves, we will interview and observe the classroom practice of a group of teachers in each school in order to understand the effects that the identified components had on instruction and the perception of leadership practices in the school. We will interview teachers who have been identified (by themselves and others) as instructional leaders, as well as those who have not. We will also interview district leaders and school board and community members who have participated in the design and implementation of IDS components. Data collection in the final 2 years of the study is described in the "Data Analysis" section, below.

Data Analysis

The purpose of our data analysis will be to make visible the development and evolution of the knowledge that guided IDS development. A case-study approach is well suited to in-depth analysis of complex issues and processes like school leadership (Shulman, 1987; Stake, 1995). Bruner (1990) has argued that the development of narratives allows researchers to capture the ways in which circumstances interlink to form a context actors must navigate. The data analysis cycle described here is designed to construct and test narratives of leadership practice to represent and communicate the knowledge that guides IDS development.

The first stage of analysis will entail constructing the qualitative and quantitative data into coherent narratives of practice (cf. Polkinghorne, 1995). To this end, data collection and data analysis will be closely integrated (Miles & Huberman, 1994). This strategy will allow us to check out hypotheses as they emerge from data analysis and refine data collection strategies as the study progresses. The resulting narratives will be organized according to the components of each school's IDS and will be designed to show (a) the way components interact, (b) the design rationale expressed by school leaders, and (c) the perceived effects on teaching and learning.

The second stage of analysis will involve constructing multimedia representations of these narratives in order to share represented practice with interested others. Here, the analytical and the pedagogical aspects of the research merge into the construction and testing of multimedia cases of practice (cf. Halverson, 2002c, Halverson, et. al., 2003). Multimedia narratives of practice provide two key advantages over linear, text-based narratives:

- Incorporating video and documented artifacts in the narratives can give a sense of the authenticity and immediacy of the practice represented (Kolodner et al., 1998; Fitzgerald, Deasy, & Semrau, 1997); and

- Hypertext narrative organization can give the practitioner greater control over the direction of the narrative path, allowing practitioners to craft a path according to their own interests.

My prior work in developing multimedia cases of practice (Halverson, 2002b; Halverson, et. al., 2003) will guide the process of translating the narrative cases to a multimedia format. These cases will incorporate video, audio, documents, graphics, and related research on best practices into user-guided narratives. The topics of my prior case development work include complex leadership practices such as professional development programs (Halverson & Gomez, 2001; Halverson, 2003) and restructuring schools to promote learning for all students (Capper & Halverson, 2003). Through this earlier work, I developed a template to organize complex leadership practices in terms of questions of interest to aspiring leaders. We will use this template to organize the initial text narratives into multimedia narratives of practice.

The final stage of data analysis will involve user testing to provide a check on the research validity and evocativeness of the case representation. User testing plays an important role in tailoring the interface and function of computer programs to user needs (Flagg, 1990; Nielsen & Mack, 1994, Shneiderman, 1998). User-testing practices aim to elicit and integrate user input throughout the design process, from program conceptualization, to task analysis, to prototype revision, to rollout and implementation strategies. The user-testing process provides additional benefits when used to evaluate cases of practice. Given the power of cases to evoke as well as represent knowledge, a residual effect of user-testing multimedia cases of practice is to open a window on how users think about the practices represented, as well as their own practice. User testing a case of practice, for example, not only provides designers with helpful information about how to refine the software design, but also provides researchers with a glimpse into the tacit assumptions of practice in the

actual context in which the work is done (Capper & Halverson, 2003; Halverson, 2003). The evocative nature of these prototype multimedia narratives will provide the basis for reflective interviews with the key practitioners involved in the design of the IDS, as well as practitioners affected by the IDS, in order to elicit details of the process not identified by our earlier investigations. We will also conduct user testing–based, reflective interviews with a wide variety of similarly situated practitioners to determine the appropriate organization of the case material. The data collected though the reflective interviews will then be coded and reintegrated into the final multimedia cases to provide a more well-rounded representation of local leader knowledge.

Educational Activities

This section describes the educational activities associated with the proposed study. Three component activities will furnish educational experiences: (a) the development and dissemination of multimedia cases of practice, (b) administrator preparation and professional development, and (c) graduate student development. I will learn from these activities as much as the practitioners, aspiring school leaders, and graduate students with whom I study. In crafting my career plan, I have deliberately blurred the line between educational and research activities in an effort to show the interaction of research and practice on documenting practical knowledge. In this section, I untangle these interconnections to highlight how my research plan generates educational opportunities.

Multimedia Cases of Practice

The multimedia cases of practice that result from the study will help to address the clear need for principled representations of complex leadership practices. The process of case building and user testing will provide a rich opportunity for the school leaders whose practice we document to reflect on their own practice (Schon, 1983, 1991). The assessment of feedback sessions has already been included as a key aspect of the pilot research process. These discussions will allow leaders to develop a language and framework for understanding their efforts to improve student learning.

I will work with state educational organizations such as the Association of Wisconsin School Administrators and the Wisconsin Department of Public Instruction, as well as the Department of Educational Administration at UW-Madison, to make the cases and organizational templates publicly available to practitioners online. We will work with practitioner groups and schools to develop auxiliary materials, based on the field data used to build cases and related research materials, that will provide school leaders with opportunities to reflect on their own practice. We will develop an online feedback process to assess the degree to which school leaders find these cases and professional development sessions useful. The online case-based professional development plan will provide the educational administration counterpart of Sharon Derry's work NSF-supported work in online teacher professional development at UW-Madison.

Administrator Preparation

A primary educational task of the Department of Educational Administration at UW-Madison is to prepare school leaders and researchers to improve student learning in schools. In line with this goal, the data we gather through the proposed field research will provide a rich opportunity to engage students in the complexities of school leadership; the resulting cases will show how other school leaders recognized and resolved the issues of improving student learning in their schools. These multimedia cases and the research from which they are developed will provide ample material for constructing problem-based learning scenarios (cf. Bridges & Hallinger, 1999) to immerse students in authentic contexts of school leadership. In addition, we will work with local and state educational organizations to present our findings and to stimulate conversations about the ways school leaders can

help improve student learning. The course I teach that uses project data and cases is, like all UW courses, routinely evaluated by enrolled students, ensuring that it will be assessed and refined to best help aspiring school leaders to prepare to do their work.

Graduate Student Development

The study will provide a context for graduate student education in educational administration in several ways. First, the project will be structured throughout to train graduate students as researchers. Students will help with site selection, design of interview protocols, drafting and administering surveys and other instruments, and data collection and analysis. Students will take the lead in designing a strategy for storing and accessing the large amount of qualitative and quantitative data and will share the responsibility for developing methods to interpret the data. Second, involvement in case construction will give graduate students the opportunity to develop not only technical skills but also the ability to construct coherent narratives of practice. Third, our dissemination efforts will allow students to develop as academic writers. Finally, using the project data in my classroom practice will allow a wide range of students to interpret the data and to use the cases to reflect on their own practices as school leaders.

Work Plan

The work plan outlined here is based on a project start date of July 1, 2004, and an end date of June 30, 2009, and follows a summer, fall, and spring cycle. The evaluation of educational activities is described in the preceding section.

Year 1 (2004–2005)

During the summer of 2004, work will focus on site selection and developing research instruments (e.g., surveys, interview and observation protocols). Instrument development and refinement will continue through fall 2004. We will also develop a project Web site. At the beginning of the school year (fall 2004), we will contact 8–12 middle and elementary school principals regarding project participation. We will choose four schools (two urban and two rural) to participate as study sites. After the sites have been chosen, we will administer the school-wide survey and begin interviewing relevant positional and informal leaders to develop a preliminary map of IDS components, interaction, and history for each school. In spring 2005, we will continue with leader interviews and begin our classroom visits and observation of leadership activities related to the components of IDS in each school. Research team members will spend one day per week in each school. We will hold biweekly research team meetings throughout the year to review our research experiences and to begin developing the outlines for the narratives of practice described above. In addition, we will meet with our research advisory board in spring 2005 to discuss our initial findings and determine where we need to dig deeper in order to access leadership practical knowledge.

Year 2 (2005–2006)

Summer work will include analyzing the results of our initial investigations, developing the first draft of our narratives of practice, and revisiting our research instruments and methods. We will develop a proposal for the annual American Educational Research Association conference. The time needed to document school leaders' tacit knowledge will depend on the time it takes to establish a trusting relationship with our participants. Our summer meetings will be designed to narrow our research agenda to focus on the ways in which the IDS components interact in light of our newly established relationships. I will begin to incorporate the results of our initial research into my fall 2005 coursework. In the fall, the research process will resume in the four schools, this time focusing on

observing relevant leadership occasions, shadowing school leaders, and interviewing and observing teachers. Again, research team members will spend one day per week in each school. In spring 2006, we will revise the narratives of practice developed in the preceding year in light of the new investigations. We also meet with our advisory board to share the narratives we have developed and discuss research strategies and priorities. I will continue to incorporate early research findings into my courses.

Year 3 (2006–2007)

In summer 2006, we will begin to transform our text-based narratives into multimedia cases of practice, and we will conclude our initial data collection in the schools. Data analysis will continue by assembling the documentary record, field notes, interviews, and video into prototype multimedia cases of practice. We will work with multimedia consultants to design the interface and layout of the cases. We will develop a proposal for the annual American Educational Research Association conference. In the fall, we will complete construction of the prototype cases and develop instrumentation to facilitate user testing. In spring 2007, we will return to our schools to test whether the cases have captured the essence of leadership practice. We will also begin to conduct user-testing sessions and professional development workshops with other practitioners to determine whether the cases effectively communicate leadership practice. I will incorporate the initial cases into my courses and work within the UW-Madison School of Education to find collaborators willing to use the cases and/or the technologies in their courses.

Year 4 (2007–2008)

Analysis of the first round of user-testing data will begin in summer 2007. These data will be used to refine and revise the prototype cases of practice. We will begin to work with state educational agencies on case dissemination, and we will participate in state practitioner conferences to share the initial study results. We will also develop a proposal for the annual American Educational Research Association conference and for the International Society of Learning Sciences conference. In fall 2007, we will work with multimedia consultants to complete our revisions of the multimedia cases of practice. We will also meet with our advisory board to share and receive feedback on the multimedia cases and discuss dissemination and research strategies. In spring 2008, we will begin a second round of user testing, this time aimed at understanding the ways that the cases spark conversations among practitioners, rather than at generating data to improve case design.

Year 5 (2008–2009)

Analysis of the second round of user-testing data will begin in summer 2008. These data will be used to inform how the cases can facilitate professional development opportunities. We will make final revisions to the multimedia cases and construct a question-based index to facilitate user identification of specific practices within the cases. We will develop a proposal for the annual American Educational Research Association conference. In fall 2008, we will conduct professional development workshops using the cases in coordination with state educational agencies, and I will continue to build cases and principles of case design into my courses. In fall 2008 and spring 2009, we will construct a web site around the case template to allow users to organize their own experience and import documents and case materials to build question-based multimedia cases of their own practice. A final meeting with our advisory board in spring 2009 will allow us to discuss research findings and directions for future research.

Relationship to Career Goals, Job Responsibilities, and Institutional Goals

This study describes a career path dedicated to providing leaders and researchers with contextually sensitive tools for effectively engaging in complex reform efforts. As a research agenda, the plan describes how I will develop theories and methods to access, represent, and communicate the practical knowledge of school leaders. As an educational agenda, the plan describes how I will both provide and participate in a variety of learning opportunities for researchers and practitioners. In this section, I describe how the proposed project reflects my career goals and job responsibilities, as well as institutional goals.

Career Goals

The goal of my research is to develop theories and methods to understand, access, document, and communicate the practical wisdom of successful instructional leaders. Accessing and communicating practical wisdom is a key aspect of educating prospective school leaders. My work is grounded in Aristotle's concept of *phronesis*, or practical wisdom, which suggests that the wisdom that guides practice cannot be well represented apart from the character of the practitioners and the context in which the practice occurs. Although the aim of generating theoretical and technical knowledge is to extract what can be known apart from the context of use, Aristotle claims that practical knowledge cannot exist apart from this personal, social, and situational context. To communicate best leadership practices to a wide range of schools, we need to be able to understand and represent the characteristics of expert school leaders' practice *in situ*—that is, in the actual contexts of practice. My efforts to represent and communicate the practical wisdom of school leaders draw together several theoretical and methodological traditions to establish a generative program of research to produce knowledge for both researchers and practitioners. The research program has three key stages: (a) developing theoretically grounded methods to access practical wisdom, (b) developing case-based representations of practical wisdom that help practitioners articulate and reflect on their practice, and (c) applying this research base and method to further investigate contemporary instructional leadership practice.

Job Responsibilities

As a faculty member at UW-Madison, I am expected to conduct research of nationally recognized quality, advise graduate students, teach graduate courses in educational administration, and participate in local, state, and national in-service activities. The proposed study will address each of these responsibilities. The study will focus on an important and understudied area, ensuring that I will create new knowledge in the field of educational administration. The study will allow me to advise and provide rich research experiences for graduate students. The study's data and products will shape my courses and professional development opportunities. Finally, my research results will be presented at researcher- and practitioner-oriented conferences.

Institutional Goals

This study addresses both university and departmental goals. The UW-Madison mission statement contains two goals relevant to the proposed study: (a) to generate new knowledge through a broad array of scholarly and creative endeavors that provide a foundation for dealing with the immediate and long-range needs of society; and (b) to offer broad and balanced academic programs that are mutually reinforcing and emphasize high-quality and creative instruction at the undergraduate, graduate, and professional and post-graduate levels. The proposed study has the potential to generate new knowledge about how school leaders work to improve learning for all students. The related educational activities address the second goal. The study also directly addresses the Department of

Educational Administration's mission to create, integrate, exchange, and apply knowledge about leadership, learning, and organizational performance to advance educational quality and opportunity. The knowledge created in the study will contribute to what we know about school leadership and will apply this knowledge to shape educational opportunities for our students.

Summary of Prior Research and Educational Accomplishments

My background as a researcher, practitioner, and teacher qualifies me to engage in this research project. As a former teacher and school administrator, I understand the challenges of helping to improve student learning directly in the classroom and indirectly through supporting teacher practices. My doctoral studies in the Northwestern University Learning Sciences Program allowed me to build on these experiences to develop a multifaceted research program. I was fortunate to have the opportunity to participate in the conceptual organization of several research programs and to engage in several field-based research projects, including the NSF-funded Living Curriculum Project and Distributed Leadership Study. My dissertation study (2002c) focused on developing methods to understand how the practical wisdom of school leaders can be captured in daily instructional leadership practice. The insights developed through that study and in related research (Halverson & Zoltners, 2001; Halverson & Gomez, 2001; Halverson, 2002b, 2003, in press; Halverson, et. al., 2003) inform the main ideas of the proposed project. As a part of this earlier research program I developed a multimedia case of practice that serves as a prototype for my current work.

Since coming to UW-Madison in fall 2001, I have pursued several research projects related to the proposed study. Colleen Capper and I received support from the Wallace Foundation to study and develop multimedia cases of how leaders reshaped their schools to improve learning for students who traditionally struggle (Capper & Halverson, 2003). During the past year, I collaborated with Carolyn Kelley, Allan Odden, and the Consortium for Policy Research in Education (CPRE) to study how the context of practice shapes how school leaders make sense of complex teacher evaluation programs (Halverson, Kelley, & Kimball, 2003). These research experiences have helped me make contacts with educational leaders throughout Wisconsin and enabled me to design and conduct a research program of my own.

Advisory Board

Norman L. Webb is a senior research scientist with the Wisconsin Center for Education Research. A central focus of his work is to study strategies for evaluating systemic reform through projects including the NSF-funded "Center for the Integration of Research, Teaching, and Learning" (CIRTL) and "System-wide Change for All Learners and Educators" (SCALE).

Gary Schumacher is a career educator currently serving as superintendent of the Monona Grove School District in Monona, Wisconsin. Prior to serving in this capacity, he served was a human resources director for two public school districts in the Milwaukee area. His doctoral research involves teacher evaluation and administrative leadership.

Gary D. Fenstermacher is a professor of education at the University of Michigan. His research interests are the philosophy and politics of teaching. His current research pertains to how teachers reason about their practice and foster the moral development of their students. His scholarly interests include developing theories of practical reasoning in education, the analysis of policies pertaining to teaching and teacher education, and in the nature of the connections between democracy and education.

Allan Collins is a professor of education and social policy at Northwestern University and a research professor of education at Boston College. He is best known in psychology for his work on semantic

memory and mental models; in artificial intelligence for his work on plausible reasoning and intelligent tutoring systems; and in education for his work on inquiry teaching, cognitive apprenticeship, situated learning, epistemic games and systemic validity in educational testing. His current research interests include the history of technology in education, teaching and learning, scientific inquiry

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