

# Educational Administration Quarterly

<http://eaq.sagepub.com/>

---

## Professional Community in Chicago Elementary Schools: Facilitating Factors and Organizational Consequences

Anthony Bryk, Eric Camburn and Karen Seashore Louis  
*Educational Administration Quarterly* 1999 35: 751  
DOI: 10.1177/0013161X99355004

The online version of this article can be found at:  
<http://eaq.sagepub.com/content/35/5/751>

---

Published by:



<http://www.sagepublications.com>

On behalf of:



University Council for Educational Administration

**Additional services and information for *Educational Administration Quarterly* can be found at:**

**Email Alerts:** <http://eaq.sagepub.com/cgi/alerts>

**Subscriptions:** <http://eaq.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

**Citations:** <http://eaq.sagepub.com/content/35/5/751.refs.html>

## **Professional Community in Chicago Elementary Schools: Facilitating Factors and Organizational Consequences**

Anthony Bryk  
Eric Camburn  
Karen Seashore Louis

*Professional community is receiving markedly increased attention as part of both practitioner and scholarly efforts to promote improvements in instruction and student learning. Interest in this area joins two previously distinct literatures, one dealing with the benefits of communal school organization and another with enhanced teacher professionalism, to formulate a theoretical framework for a school-based professional community. Using data from a large urban school district, this article tests the impact of structural, human, and social factors on the emergence of school-based professional community and examines the extent to which such developments in turn promote learning and experimentation among faculty.*

**T**he attention given to professional community in the past few years rests on both practitioner and scholarly efforts to promote improvements in teaching and student learning. This interest blends ideas from two different

---

The authors are listed in alphabetical order and contributed equally to this research. This research was funded in part by the Wisconsin Center for the Organization and Restructuring of Schools, supported by the U.S. Department of Education, Office of Educational Research and Improvement (Grant No. RI 17Q000005-95). Additional support was provided by the John D. and Catherine T. MacArthur, Joyce, and Spencer Foundations; and by the University of Chicago School Math Project; through grants to the Consortium on Chicago School Research. We acknowledge our conceptual indebtedness to our colleagues Sharon D. Kruse and Helen Marks, whose previous collaborative work with us is reflected in our conceptual framework. We also thank Winifred Lopez at the University of Chicago who helped develop many of the measures used here. The opinions expressed are those of the authors, and do not necessarily reflect the views of the supporting agencies.



© 1999 The University Council for Educational Administration

streams of work. The first stream is grounded in philosophical and sociological theories of communities as collectivities in which behavior is shaped by shared goals, shared values, and regular personal contact (Dewey, 1900; Hawley, 1950; Tonnies, 1887; Weber, 1947). There is now extensive evidence that schools organized as communities promote greater teacher commitment and more student engagement in school work (Bryk & Driscoll, 1988; Bryk, Lee, & Holland, 1993; Lee, Smith, & Bryk, 1993; Rowan, 1993). Within the second stream of research, it is argued that enhanced teacher professionalism (i.e., increasing the professional status of teaching and providing teachers with greater opportunities for professional growth) is a prerequisite in efforts to promote more challenging academic work for all students (e.g., see Darling-Hammond, 1987; Liebermann, 1988). Rowan (1994) argues that such enhancement will occur when teachers are trained to deal with the complexities of teaching more effectively, because it is this relationship between work complexity and professional preparation on which the status of the profession hinges. Kruse, Louis, and Bryk (1995) joined these two previously distinct literatures together to formulate a theoretical framework for a school-based professional community.

The extant research on school-based professional community is limited to a small number of substantially restructured schools (Newmann & Whelage, 1995). Although some of these are in urban districts (e.g., see the case study by Raywid, 1995), most of the schools studied to date are either new schools, alternative schools, or magnets that benefit from some selectivity with regard to both faculty and students. In contrast, this study uses an empirical database from the urban school district of Chicago, Illinois, to examine some key propositions about professional community in a large sample of "ordinary" public elementary schools.

Like most urban districts, the Chicago Public Schools suffer from very low student achievement, and until the early part of this decade at least, work conditions have not been especially conducive to the emergence and sustenance of school-based professional community (Hess, 1991; Squires, 1988). Like most urban districts, Chicago has had difficulty recruiting and retaining the most talented teachers (Englert, 1993). Typically, urban teachers are also less involved in policy decisions, treated with less respect by administrators, and have fewer opportunities to engage in significant work with each other (Corcoran, Walker, & White, 1988). In addition, the nature of work in urban schools is often hurried, focused on the short term, and subject to frequent external redirection. Under such circumstances, few teachers and administrators are inclined to being "reflective practitioners" who eagerly seek new information to improve their work. Ultimately, the presence of adverse conditions such as these reduces teachers' sense of efficacy and commitment to

their work and also tends to promote more negative attitudes toward the students they teach (Rosenblum, Louis, & Rossmiller, 1994).

Conditions in many Chicago elementary schools, however, changed quite dramatically in the aftermath of the Chicago School Reform Act of 1988. Bryk, Easton, Kerbow, Rollow, and Sebring (1993) documented an expansion of participation in local school affairs by parents, teachers, and community members. Substantial local initiative has focused on broad and deep restructuring of school operations. These local change efforts were catalyzed by the 1988 reform that devolved considerable resources and authority to local school actors over school improvement efforts. Under such conditions, it is reasonable to expect that alternative work organizations for teachers, such as school-based professional communities, might emerge in at least some schools.

In a 1994 survey of Chicago public elementary school teachers, the Consortium on Chicago School Research captured a snapshot of these developments 5 years after the onset of reform. This article uses teachers' responses from that survey. We examine both the impact of structural, human, and social factors on the prevalence of school-based professional community and the extent to which such developments are linked to greater learning and experimentation on the part of teachers.

## CONCEPTUALIZING PROFESSIONAL COMMUNITY

Broadly speaking, we use the term *professional community* to refer to schools in which interaction among teachers is frequent and teachers' actions are governed by shared norms focused on the practice and improvement of teaching and learning. Like earlier theoretical work on the general concept of community, our conception of professional community contains both behavioral (i.e., personalized social relations) and normative (i.e., shared values and purposes) features.

### Essential Features of Professional Community

Three core practices characterize adult behavior in a school-based professional community: (a) reflective dialogue among teachers about instructional practices and student learning; (b) a deprivatization of practice in which teachers observe each others' practices and joint problem solving is modal; and (c) peer collaboration in which teachers engage in actual shared work. Engaging in collegial activities may spur critical reflection and expose teachers to new visions of practice. In this respect, the practices of professional

community may provide teachers with opportunities to learn new ways of teaching. Such practices may also provide a means of communicating the prevailing norms within a community to new members.

Undergirding these practices are shared norms focused on student learning and collective responsibility for school operations and improvement. These shared beliefs about institutional purposes, practices, and desired behavior are thought to provide a normative structure that governs professional behavior. In professional communities, these behavioral guidelines are internally developed and agreed upon, rather than externally imposed in a bureaucratic fashion.

If the organizational arrangements associated with professional community are to have a lasting impact on school operations, they must be sustained and developed over time. This suggests that a third important feature of professional community is the way in which new members are brought into existing school faculties. Because the norms of a professional community are internally developed, internal socialization routines, which serve to sustain and perpetuate the shared practices and norms, are thought to be more effective than external control of new membership. When internal socialization routines are working properly, they should provide a self-renewal mechanism for professional communities.

Kruse, Louis, and Bryk (1995) argued that this combination of core practices, shared norms, and socialization structures creates a distinctive workplace for teachers. We elaborate below on the nature and rationale for each of these features.

*Reflective dialogue.* Strong professional communities are built on teachers who regularly engage in discussions with colleagues about their work. By engaging in extended conversations that hold beliefs about teaching, learning, and instructional practice under scrutiny, teachers can examine the assumptions basic to quality practice (Newmann, 1991). Reflection upon practice leads to deepened understandings of the process of instruction and of the products created within the teaching and learning process.

*Deprivatized practice.* In professional communities, teachers move behind the classroom doors of their colleagues to share and trade off the roles of mentor, adviser, or specialist (Lieberman, Saxl, & Miles, 1988; Little 1990). Through strategies such as team teaching and peer coaching, teachers share and observe each other's methods and philosophies. This opening up of one's practice to scrutiny also encourages teachers to ask questions about their practice and to view it in a more analytic fashion. In this way, teachers also

come to know each other's strengths and can therefore more easily find "expert advice" from colleagues.

*Collaboration/shared work.* Cooperative relationships are a critical component of a productive workplace. This entails considerably more, however, than a mere cordiality among staff. Although the latter is a basic social quality necessary to maintain a workplace (Bryk & Schneider, 1996), real collaboration involves shared work. In an advanced professional community, teachers collaborate on schoolwide projects and are broadly engaged in school improvement efforts. Such activities foster the sharing of expertise as faculty members call on each other to address the core problems of practice (Little, 1982, 1990). Collaborative work also increases teachers' sense of affiliation with each other and with the school, and it heightens their sense of mutual support and responsibility for effective instruction (Louis, 1992).

*Normative control.* A set of shared norms focused on student learning underlays the three practices discussed above and bring coherence to a school-based professional community. Specifically, a focal attention on student learning is the anchoring content of such a workplace (Newmann & Wehlege, 1995). When teachers in these communities strongly believe that all students can learn, advancing the education of all students becomes the central concern. In such settings, teachers' professional actions consistently focus on choices that affect students' opportunities to learn and provide substantial student benefit (Abbott, 1991; Darling-Hammond & Goodwin, 1993; Darling-Hammond & Snyder, 1992; Little, 1990). Moreover, when such beliefs and values are normative in a school, it creates an informal social control mechanism that strongly guides adult behavior. This stands in sharp contrast to a "work to rules" mentality, grounded in fiscal incentives and formal sanctions, which is characteristic of a more mechanistic organization of teachers' work (Rowan, 1993; Weisbord, 1991).

A base of shared values focused on student learning may culminate in a collective sense of responsibility for school operations and improvement. Thus, it is hypothesized that in schools organized as professional communities, faculty should be more likely to assume responsibility for school operations and improvement (rather than seeing this as the sole province of district officials or the school principal). A collectively held sense of responsibility for how the core functions of a school are carried out signals that shared norms about teaching and learning exist in a school and that those norms are enacted by a majority of the faculty.

*Socialization of new professional members.* Where strong school norms exist, we are also likely to find deliberately maintained processes to socialize new members into these norms (Driscoll, 1989; see Raywid, 1995, for a case study account of one such school). Through their mutual efforts, teachers generate an induction process to protect existing routines and perpetuate the school community. In contrast, schools that pay no attention to socializing newcomers are often “normless” and provide anomic environments inconsistent with the core premise of a professional community.

Many of the features of professional community mentioned above imply that teachers and others in the school are generating and sharing information with the purpose of improving teaching and learning. This behavior is one of the fundamental practices underlying the popular concept of organizational learning (Louis, 1994; Senge, 1990). The organizational learning perspective assumes that members of the school must find information and knowledge resources both in and outside the school to facilitate the deep discussions and collaboration that are defined as elements of professional community (Louis, Kruse, & Raywid, 1996). Although the primary focus of this research is on professional community and the factors that support it, we also examine this correlative concept. We discuss the relationship between professional community and organizational learning in greater depth below.

### **Organizational Factors Facilitating Professional Community**

This research evolved out of a program of work on the organization and restructuring of schools, which sought to develop a comprehensive and integrated theory of the embedded contexts of support needed to sustain rigorous intellectual activity for all students. (For a general introduction, see Newmann & Wehlege, 1995.) Within this larger framework, a school-based professional community is conceptualized as a set of organizational arrangements necessary to promote the faculty development and instructional improvements required to advance such learning. We argue that these organizational arrangements are in turn supported by a set of facilitating conditions that fall into the broad categories of human and social resources and supportive structural features of schools. If in fact this kind of organization turns out to support school improvement efforts as hypothesized, it will be important to understand what organizational and environmental conditions support the development of that capacity. We discuss three key facilitating conditions we feel may be important in this regard below.

*School size.* A substantial body of research evidence indicates that small schools are more engaging work environments for both students and adults.

(For a review of this research, see Lee et al., 1993.) In general, school size plays an important role in structuring the social dynamics of the school workplace. Small schools tend to have fewer programs, and as a result, staff are more likely to engage in common endeavors. In addition, because of the compactness of the social network, communication can more easily flow through direct face-to-face interactions, rather than relying on more bureaucratic mechanisms. This common sense of purpose and the opportunities for communication should be valuable assets to the development and maintenance of a professional community.

*Principal leadership.* “Good” principal leadership has been frequently associated with improved student learning. However, the specific aspects of principal leadership that promote these developments are less clear. Some have found that a highly facilitative principal leadership style, with the “principal as follower” or “leading from the center,” promotes better restructuring (Murphy, 1994). Other studies have indicated however that a more directive leadership style may be helpful (Murphy, 1989; Louis, 1992). Whatever the specifics, it seems very unlikely that a professional community can be sustained within a school without strong principal support. On the managerial side, time and resources must be provided to allow this to occur. From a communal leadership perspective (Sergiovanni, 1992), principals play a key role by nurturing a normative climate in which innovative professional activity is supported and encouraged.

*Trust.* The social resources of a school community are key elements in schoolwide improvement efforts (Bryk & Schneider, 1996; Spillane & Thompson, 1997) and more generally in the efficient functioning of schools (Bryk, Lee, & Holland, 1993). Previous research has documented that trust and respect from colleagues inside the school and key members of relevant external communities are necessary conditions for developing teacher commitment (Firestone & Rosenblum, 1988; Louis, 1992). Without trust among faculty, change efforts may become contrived and lack lasting impact (Hargreaves, 1992; 1994). For these reasons, we hypothesize that social trust is another key facilitating factor for professional community.

### **Effects of Contextual and School Compositional Factors**

If professional community is to function as an organizational capacity that supports school improvement on a widespread basis, it must be able to develop and flourish in a wide variety of contexts. In nearly any kind of setting, the composition of teachers and students within the school and certain



features of the surrounding community may pose barriers to significant attempts at modifying teachers' work. The challenges posed by such barriers may be more pronounced in urban settings. Below, we discuss a number of environmental and contextual factors that are likely to influence the development and maintenance of professional community. These elements are also considered in our empirical analyses.

*Racial diversity among faculty members.* It is often observed that community is more likely to occur in homogeneous rather than heterogeneous groups (Bryk & Driscoll, 1988). When all members of the group share the same assumptions, habits, and values, it is reasonably easy to engender the trust and stable expectations for behavior that support community (Coleman, Hoffer, & Kilgore, 1982). Because urban teachers are more diverse in their backgrounds than a typical small-town or suburban setting, differences in the racial and ethnic composition of schools, both among faculty and students, may decrease community among teachers.

*Gender composition.* It is argued that the gender composition of a school faculty may also affect community because the expectations women and men have about values, goals, and work-related behavior differ (Hofstede, 1991; Shakeshaft, 1987; Tannen, 1994). Women, in general, are more interested in dense patterns of informal communication at work and less likely to prefer individualistic work settings. Louis and Marks, 1998) found some evidence that gender composition can affect the development of professional community in a study of 24 elementary, middle, and high schools. Because their sample size was small, however, they were unable to control for the possible confounding effects of school level (i.e., secondary vs. elementary schools) on professional community. The results presented here afford a more rigorous empirical test of the gender composition hypothesis.

*Work force stability and turnover.* A mature, professional community is built on patterns of interaction over time that increase trust and reinforce common expectations. Thus, in school settings in which adult relationships are productive and functional, we would expect that workforce stability would foster professional community. However, we would hypothesize the opposite effect in settings where dysfunctional faculties are more commonplace. Previous research has documented that many Chicago schools at the onset of the 1988 reform were characterized by a stable core of senior faculty who had come to accept the dysfunctional state of affairs and were not especially inclined to challenge them (Bryk, Easton, Kerbow, Rollow, and Sebring,

1993; Rollow & Bryk, 1993). A major faculty turnover may be required under such circumstances to catalyze initiative to change the status quo. Case study evidence supports this hypothesis. Bryk and colleagues found that principals in actively restructuring schools used authority granted them under the 1988 Reform Act to reshape their faculties, hiring teachers of their own choosing without regard to seniority and aggressively “counseling out” problematic colleagues.

*Neighborhood context.* One of the primary aims of the Chicago reform legislation was to reconnect schools with the families and communities they serve. These connections between school, parents, and communities can be a resource for school improvement efforts. However, factors such as high rates of residential mobility, poverty, and illiteracy among the adult population make the establishment of these links an extremely challenging task. Thus, we expect that the development of professional community will be more difficult in more disadvantaged-community contexts.

### **The Impact of Professional Community on School Operations**

As we noted earlier, interest in school-based professional community arose out of a study of efforts to restructure schools to promote more challenging intellectual work for all students. However, the path between professional community and instructional improvement is not necessarily a direct one because professional activities and norms within a school could be oriented toward achieving a variety of purposes, instructional improvement being just one. For example, consider a high-performing school that has a long history of providing challenging intellectual work for its students. If such a school were organized as a professional community, we might hypothesize that professional interaction within the school would be oriented toward conserving existing practice rather than changing it. But in high poverty settings like Chicago, preservation of the status quo is likely to perpetuate substandard practices in many cases; in such cases, one would hope that professional norms and supports would be oriented toward instructional innovation rather than a maintenance of the status quo.

Louis (1994) argues that schools' capacities for innovation resides in their ability to collectively process, understand, and apply new ideas about teaching and learning. She and others refer to such capacity as “organizational learning” (Duncan & Weiss, 1979; Louis, 1994; Senge, 1990). We expect that in certain situations the core practices of professional community and their accompanying normative supports may provide opportunities and incentives for instructional innovation. For example, in schools in which

cooperative grouping techniques are highly valued and where public classroom practice is prevalent, teachers presumably would have both opportunities to learn about and pressure to adopt cooperative grouping practices. Though the literature characterizes organizational learning as a complex process of continual innovation and improvement, our data limit us to operationalizing this construct as a general orientation of a school faculty toward experimentation and innovation. In our statistical analyses, we examine whether such a climate of experimentation and innovation is more common in schools organized as professional communities.

## METHOD AND DATA

This study uses data from a survey administered to public elementary school teachers in Chicago during the spring of 1994 to examine the hypotheses described above.<sup>1</sup> The purpose of the survey was to gather information on teachers' views of the school environment, classroom learning, parental involvement, governance, and the professional work life of teachers. Data from 5,690 teachers in 248 elementary schools were analyzed for this article. Supplemental information about school background and neighborhood context was drawn from the Chicago Public School records and 1990 U.S. Census of Population and Housing.

Measures of the components of professional community and organizational learning were developed by applying a Rasch rating-scale model (Wright & Masters, 1982) to clusters of items from the 1994 teacher survey. Rasch analyses produce three statistics that are particularly useful in assessing the reliability and validity of measures. The first is item difficulty, which estimates the likelihood that respondents will endorse the position, attitude, or behavior represented by each item within a scale. Common events, attitudes, beliefs, and so on are *less difficult* to endorse; rarer ones are *more difficult*. In this study, all item difficulties have been placed on a 0 to 10 scale with the least difficult items (i.e., most prevalent beliefs, attitudes, and behaviors) having low values on the scale.

A second statistic, infit mean square, indicates the extent to which respondents' answers to an item are consistent with the hierarchical placement of the item in the scale. If the infit mean square statistic is approximately 1.0, this means that individuals are responding to the item consistent with its location in the scale. For example, if respondents endorse or agree with a particular item, they should also endorse the easier items below it in the scale, but not necessarily endorse the more difficult items above it. Thus, the infit mean

square statistics capture the extent to which persons' response patterns align with a hierarchical rank ordering of items.

A third statistic is the person separation reliability. This is directly analogous to a Cronbach's alpha and measures the internal consistency reliability of each scale. Taken together, these item statistics provide considerable evidence for evaluating the validity of each measurement constructed.

In addition to producing information that can be used to validate scales, Item Response Theory (IRT) analyses also generate scale scores for individuals that have been measured, and it is these scale scores that were used in statistical analyses. These scores share the same 0 to 10 scale as the item difficulties, with high scale scores associated with the most positive reports.

### **Professional Community Measures**

Six component measures were created to tap each of the constituent elements of a professional community. Appendix A presents the results of the Rasch rating-scale analyses for these measures. All six appear to follow a theoretically consistent hierarchical ordering with acceptable person separation reliabilities ranging from .60<sup>2</sup> to .90. Of the 34 items that make up the component measures of professional community, only 5 had infit mean square statistics that were substantially higher than 1. This indicates that most respondents' answers were very consistent with the hierarchical ordering of the items in these six scales.

*Reflective dialogue.* This nine-item cluster focuses on teachers' conversations with one another about instruction and student learning. Teachers reported how often they discuss with colleagues the nature of teaching and learning, ways to help students learn, ways to manage classrooms, the goals of the school, and developing new curriculum. Teachers were also asked whether they express their views at faculty meetings, share personal opinions, and discuss matters of teaching and instruction with colleagues. A high score on this scale means that extensive conversations are occurring that move beyond basic classroom management to include both student learning and schoolwide improvement initiatives.

*Deprivatized practice.* Five items comprise this scale. It measures the extent to which colleagues share useful information about new curriculum materials, observe or teach in each others' classrooms, and provide meaningful feedback on their teaching. A high score means that teachers have opened their classrooms to outside scrutiny and have worked together to improve instruction.

*Staff collegiality/collaboration.* Teachers were asked about the quality of relations among the faculty, whether school staff coordinate teaching and learning across grades, and shared efforts to design new instructional programs. This four-item scale assesses the extent of a cooperative work ethic among staff, with high scale scores reflecting a school context in which faculty have moved beyond mere cordial relations to actively working together.

*Focus on student learning.* This five-item cluster evaluates the extent to which activity and decision making in schools are directed at creating an environment in which students can learn well. Teachers reported whether the school had well-defined learning expectations, set high standards for academic performance, organized the school day to maximize instructional time, and focused important decisions on what is best for student learning. To obtain a high scale score on this measure, teachers had to strongly agree that all of these practices were characteristic of their school.

*Collective responsibility for school operations and improvement.* A cluster of six items focuses on the extent of a shared commitment among the faculty to improve school operations. Items in this scale asked teachers about how many of their colleagues feel responsible to help each other do their best, work together to improve the school, and work to maintain discipline in the entire school. A high score on this scale signals the existence of a strong sense of shared responsibility among the faculty to improve day-to-day operations.

*Teacher socialization.* This two-item Rasch measure characterizes the extent to which new teachers are inducted into the faculty and made aware of norms among teachers within the school. Teachers answered whether a conscious effort was made by existing faculty to welcome new teachers and to invite them into their classrooms and give them feedback.

*Professional community composite.* A principal components factor analysis was performed to determine whether it was reasonable to combine the component measures of professional community into a single composite. Only one factor emerged with an eigenvalue greater than 1.0. This factor explained 59% of the common variance in the six component measures. With the exception of deprivatized practice, the factor loading for each component was .77 or higher. The factor loading for deprivatized practice was .42, and despite this relatively weaker fit, this component was maintained because it is felt that it plays an integral role in defining professional community. This statistical evidence suggests that the six component indicators of professional community measure a single organizational construct. Because pre-

liminary analyses based on each of the separate components yielded highly consistent findings, we present only the results using the composite measure.

The composite measure used here is an “information weighted” mean of the six separate components. In addition to producing a measure for each person, a Rasch rating-scale analysis also estimates a standard error for each person that takes into account whether they answered all of the items (or only a subset) and the extent to which their responses are consistent with the estimated hierarchical ordering. The standard error is inflated to the extent that information is missing or the responses appear inconsistent. The inverse of this standard error is proportional to the information associated with each person’s measure and was used as a weighting factor in creating the composite. (See Appendix B for a discussion of how a hierarchical linear model analysis [Bryk & Raudenbush, 1992] was used to accomplish this.)

### **Organizational Learning**

We conducted an additional Rasch rating-scale analysis to create a measure of the extent to which school staffs maintain an environment oriented toward organizational learning (see Appendix A). The resulting measure had a reliability of .78. Included were five items that asked about whether teachers are continually learning and seeking new ideas, have a “can-do” attitude, and are encouraged to change. Widespread endorsement of these items (i.e., high scale scores for many teachers) indicates a strong orientation toward experimentation and innovation and also indicates that conditions in a school are ripe for organizational learning to occur. Again, the estimated hierarchical ordering of the survey items seemed theoretically sensible, and only two items in these scales had infit mean square statistics that were significantly greater than 1. Although we formally hypothesized that the emergence of professional community should accelerate professional learning across the organization, to test this properly requires longitudinal data. Given the cross-sectional data currently available to us, we simply examine at this point the strength of the association among these organizational constructs. Clearly, a strong statistical relationship is logically consistent with (but does not prove) the hypothesized causality.

### **Measures of Facilitating Factors, School Context, and Teacher-Level Controls**

We have argued that facilitating organizational factors and a variety of school and community context variables should predict professional community. It is also reasonable to expect that some teachers are more

predisposed to seek out and participate in professional community than others and that their personal background characteristics may explain some of this variance. Appendix C describes these three classes of independent variables in detail. In most cases, our operationalization of theoretical constructs was straightforward, but our measurement of facilitating factors warrants a few words of clarification.

The facilitating factors of professional community were operationalized with four variables. Principal leadership was measured with two scales, one indicating the degree to which principals work directly with teachers and supervise their work, and another indicating the extent to which principals are perceived to employ a facilitative leadership style. School size was measured with a dummy variable that identified small schools with enrollments of less than 350 students. Teacher trust was measured with a six-item Rasch scale. Additional information about these variables can be found in Appendix C.

### **Statistical Modeling**

A three-level hierarchical linear model was used to test the conceptual framework. We conducted two sets of analyses. The first set modeled the composite measure of professional community as a function of the hypothesized facilitating factors, school context and composition, and teacher-level controls. Specifically, the Level 1 model creates the information-weighted composite measure of professional community. The teacher-level controls are introduced at Level 2, and the facilitating factors, school context, and composition variables are introduced at Level 3. Three separate models were estimated: one considering school context and composition effects (Model 1), a second taking into account the effects of school size (Model 2), and a third adding the remaining facilitating factors (Model 3).

The second set of analyses examined organizational learning as an expected organizational correlate of professional community. The modeling framework is similar to the first set of analyses. The Level 1 model takes into account the errors of measurement associated with the outcome. Level 2 again considers teacher effects, and at Level 3 we add the professional community composite as a predictor variable. Three separate models were again estimated with the third model including the effects of professional community on organizational learning. Appendix B provides further technical details about the statistical models used here.

## RESULTS

### Effects of Facilitating Factors, Context, Composition, and Teacher Characteristics on Professional Community

An unconditional (i.e., no predictors at the teacher or school levels) Hierarchical Linear Model (HLM) analysis decomposed the total variance in the professional community composite into measurement error, variability among teachers within schools, and variability between schools. After partialling out measurement error, 17.4% of the variance in teachers' responses is between schools. Although proportionately modest, this estimated between-school variability is substantively important.<sup>3</sup> Using the same measures that were developed for this study, Bender-Sebring, Bryk, and Easton (1995) documented that schools ranked in the top quartile on a composite of the professional community measures tended to have an overwhelming majority of faculty members who engaged in the core activities of professional community. As a result, we may consider the practices of a professional community to be normative in these contexts. In contrast, in the bottom quartile schools, only a minority of schools' faculties reported such activity. Although pockets of professionalism may be operating in such places, schoolwide professional community is not occurring.

*Teacher characteristics.* Model 1 in Table 1 presents these results.<sup>4</sup> Teachers who commit considerable time out of class to school committees and activities are more likely to offer positive reports about professional community. Theoretically, such voluntary participation in school affairs is an important condition for building and maintaining a community within a school. Thus, we expected the positive relationship found here. We also suspected that "high involvement teachers" would generally tend to view their school in positive terms and thus offer more glowing reports across the entire survey. From this second perspective, the level of individual teacher involvement represents an omnibus control variable in the analysis, parceling out an overall response effect on the survey.

We also found differences associated with teachers' race or ethnicity and experience. Both African Americans teachers and those with more years of experience reported higher levels of professional community. In total, the teacher characteristics we employed as controls accounted for about 6% of the variation among teachers within schools on the professional community composite. We also note that because all of these variables were grand mean



**TABLE 1**  
**Conditional Models for Professional Community Composite**

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	<i>coef</i>	SE	<i>coef</i>	SE	<i>coef</i>	SE
Level 2 predictors						
Teacher involvement	0.465	0.036***	0.464	0.036***	0.448	0.035***
Female	0.139	0.082	0.142	0.082	0.151	0.082
Black	0.357	0.075***	0.352	0.075***	0.325	0.073***
Hispanic	-0.068	0.118	-0.059	0.118	-0.024	0.114
Teacher experience	0.018	0.003***	0.018	0.003***	0.018	0.003***
Missing on gender	-0.057	0.163	-0.056	0.162	0.000	0.160
Missing on race	0.142	0.132	0.147	0.132	0.122	0.129
Missing on teacher experience	0.175	0.122	0.170	0.122	0.193	0.120
Level 3 predictors						
Context and composition						
Proportion of female						
faculty	0.092	0.061	0.081	0.060	0.032	0.034
Faculty stability	-0.121	0.058*	-0.070	0.058	-0.023	0.034
Integrated student body	0.145	0.206	0.172	0.202	0.054	0.110
Primarily African						
American student body	0.074	0.207	-0.024	0.204	-0.005	0.111
Primarily African						
American faculty	-0.131	0.184	-0.083	0.181	0.022	0.097
Primarily White faculty	0.302	0.180	0.313	0.176	0.134	0.095
Prereform achievement	0.807	0.358*	0.507	0.359	0.273	0.188
Enrollment stability rate	0.200	0.145	0.193	0.142	-0.030	0.075
Neighborhood poverty	-0.061	0.092	-0.045	0.090	0.011	0.050
Neighborhood stability	0.054	0.087	0.050	0.086	-0.003	0.046
Facilitating factors						
Small school size			0.687	0.180***	0.179	0.109
Principal supervision					0.447	0.116***
Facilitative principal leadership					0.206	0.031***
Teacher trust					0.476	0.036***
Residual Level 2 variance	3.359		3.356		3.356	
Residual Level 3 variance	0.536		0.504		0.006	
Proportion of variance explained						
Level 2	0.054		0.054		0.054	
Level 3	0.284		0.327		0.992	

\* $p \leq .05$ . \*\*\* $p \leq .001$ .

centered in the analysis, average differences between schools on these factors are also taken into account (see Bryk & Raudenbush, 1992, chap. 5). As a result, some between-school variation is explained.

*School context and composition.* Models 1 and 2 in Table 1 estimate the effects of various school context and composition factors and school size. In terms of context and composition factors (Model 1), most of the estimated effects are negligible (i.e., estimates are about the size of their corresponding standard errors). One exception to this general pattern was that professional community was somewhat more prevalent in schools with higher prereform achievement. In addition, there is some indication that faculty stability was negatively related to the existence of professional community. This result is consistent with field observations offered in Louis and Miles (1990) and Bryk, Easton, Kerbow, Rollow, and Sebring (1993) that activist principals in restructuring schools aggressively use school reform agendas to reshape the composition of their faculties. These results suggest that professional community can develop in schools with widely varying characteristics in terms of the types of students served, the composition of the faculty, and the kind of neighborhood where the school is located. In other words, this is not principally an upper-middle-class phenomenon.

*Facilitating factors.* Among all the factors considered, small school size stood out as being an important facilitator of professional community (see Model 2 in Table 1). Professional community was much more prevalent in elementary schools with less than 350 students than it was in larger schools. When small school size was taken into consideration, none of the remaining context or composition variables were statistically significant.

In addition to small school size, we hypothesized that principal supervision and leadership and trust among faculty would act to facilitate the growth and maintenance of professional communities in elementary schools. We found that even after controlling for teacher characteristics, school context, and composition, all of the hypothesized facilitating factors were positively related to the professional community composite measure.

By far, the strongest facilitator of professional community is social trust among faculty members. When teachers trust and respect each other, a powerful social resource is available for supporting the collaboration, reflective dialogue, and deprivatization characteristics of a professional community. On balance, we note that the dynamic relationship between professional community and social trust is likely to be mutually reinforcing. As the practices of community are enacted, trust and respect should deepen. Thus, a base level of social trust may be necessary for the emergence of a professional community; as such a community of practice actually develops, the social resources of the community further expand. In this sense, trust has been characterized as a moral resource, in that unlike other resources such as fiscal

capital, its supply increases through use (Bryk & Schneider, 1996; Hirschman, 1970; Putnam, 1993).

We note that the large effect associated with school size in Model 2 became negligible in Model 3 (see Table 1) once the complete set of human and social facilitating factors had been introduced into the analysis. This result is consistent with the hypothesized role of small school size as a structural facilitating factor. As noted earlier, smaller schools pose simpler managerial problems because they tend to have more constrained missions and because the overall social network among adults is more compact. This creates a set of conditions conducive to the human and social resource developments necessary for a professional community to emerge and be sustained. Smallness per se does not cause professional community, however. Stated somewhat differently, community within a small school can be just as unprofessional as that in a large school if school-based actors choose not to seize the opportunities available to change their practice. In contrast, the structural features inherent in large schools make positive developments harder, although not impossible, to attain. It is in this sense that small school size is an important structural facilitator.

Facilitative principal leadership and principal supervision both emerged as important facilitating variables. The positive effect of the principal supervision variable suggests that the elements of professional community are supported by principals who are in regular contact with their faculty, even to the extent of visiting teachers' classrooms on a regular basis. The elements of professional community were also more prevalent when principals were viewed as having more inclusive facilitative leadership styles. These results suggest that principals' regular involvement with faculty members is important, but that involvement that goes beyond regular contact, that encourages teachers to be involved, to innovate, and to take risks, may be particularly supportive of professional community.

We also note that Model 3 (see Table 1) accounts for virtually all of the between-school variance in the professional community composite. However, this does not necessarily mean that our hypothesized facilitating factors, as well as context and composition influences, represent a complete explanation of this phenomenon. There may well be other important specific factors that operate to form and sustain professional communities. Such other unmeasured factors, however, would have to be highly related to the ones already included in the model, because the measures used here are in essence acting as instruments for these other influences.

### **Organizational Learning as an Organizational Correlate of Professional Community**

We next examined the extent to which a climate that is supportive of organizational learning functions as an organizational correlate of professional community. As with the professional community composite, most of the variation in this outcome lies within schools, with roughly 16% of the variation lying between schools. Nonetheless, the observed differences among schools are again substantively important and merit study (Bender-Sebring et al., 1995).

The analyses follow the same general pattern as those described above for modeling professional community. Models 1 and 2 in Table 2 take into account school context, composition, and school-size effects. Model 3 brings the various facilitating factors into the analysis. We also introduce here the school average for the professional community composite. This provides a test of the effects of professional community on the organizational learning measure net of teacher, school, and neighborhood background and net of the set of facilitating factors. Because of the extensive set of organizational controls included in this analysis, the end result is a conservative test of our hypothesized correlates of professional community. Under a more liberal conceptualization, some of the factors for which we are adjusting in this analysis (i.e., social trust) might also be thought of as consequences of professional community and should not be controlled for in estimating professional community effects.

*Teacher characteristics.* In general, the types of teachers who offer more positive reports about professional community in their schools also tend to report higher levels of a climate conducive to organizational learning (Model 1 in Table 2). Specifically, African American teachers and teachers who are more involved or more experienced offer more positive reports. We also found a positive effect associated with female teachers on the organizational-learning measure.

*School context and composition.* As with the professional community composite, a pattern of negative effects relates faculty stability to the organizational learning measure (Models 1 through 3 in Table 2). This outcome appears somewhat more prevalent in schools that have experienced recent faculty turnover. In addition, schools with climates that are supportive of organizational learning tended to have lower rates of student mobility (as measured by the enrollment stability rate). Again, the most consistent findings oc-

**TABLE 2**  
**Conditional Models for Organizational Learning**

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	<i>coef</i>	SE	<i>coef</i>	SE	<i>coef</i>	SE
Level 2 predictors						
Teacher involvement	0.496	0.076***	0.497	0.076***	0.409	0.067***
Female	0.456	0.152**	0.455	0.151**	0.428	0.153**
Black	0.622	0.159***	0.614	0.159***	0.579	0.140***
Hispanic	-0.246	0.212	-0.239	0.212	-0.210	0.214
Teacher experience	0.033	0.006***	0.032	0.006***	0.031	0.006***
Missing on gender	0.008	0.307	-0.003	0.306	0.022	0.312
Missing on race	0.261	0.258	0.270	0.258	0.223	0.249
Missing on teacher experience	0.602	0.262*	0.585	0.260*	0.584	0.235*
Level 3 predictors						
Context and composition						
Proportion of female						
faculty	0.066	0.089	0.055	0.084	-0.043	0.064
Faculty stability	-0.237	0.098*	-0.178	0.097	-0.144	0.065*
Integrated student body	0.067	0.333	0.089	0.325	-0.064	0.210
Primarily African						
American student body	-0.263	0.258	-0.359	0.257	-0.368	0.210
Primarily African						
American faculty	-0.027	0.216	0.029	0.208	-0.057	0.184
Primarily White faculty	0.338	0.293	0.359	0.289	0.070	0.182
Prereform achievement	0.672	0.578	0.395	0.558	-0.202	0.350
Enrollment stability rate	0.639	0.208**	0.623	0.210**	0.452	0.138**
Neighborhood poverty	-0.045	0.126	-0.033	0.123	-0.024	0.094
Neighborhood stability	0.033	0.122	0.033	0.120	0.006	0.086
Facilitating factors						
Small school size			0.769	0.296**	-0.003	0.206
Principal supervision					0.096	0.064
Facilitative principal leadership					0.093	0.064
Teacher trust					-0.202	0.086*
Professional community						
composite					1.185	0.114***
Residual Level 2 variance	5.780		5.773		5.593	
Residual Level 3 variance	0.731		0.698		0.002	
Proportion of variance explained						
Level 2	0.054		0.055		0.084	
Level 3	0.321		0.351		0.998	

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

curred for small school size. A climate conducive to organizational learning is more common in small schools.

*Facilitating factors and professional community effects.* In general, an environment that supports innovation and experimentation was found to be much more prevalent in schools in which professional community has developed, even after the characteristics of teachers in a school, the school's context and composition, and the facilitating factors were taken into consideration (Models 2 and 3 in Table 2). In fact, professional community was by far the most powerful predictor of this outcome. Virtually all of the between-school variability in this outcome is explained after this factor is entered into the equation.

The magnitude of the estimated professional-community effect becomes clearer if we consider it in comparison to the actual between-school variability on the organizational learning outcome. The estimated standard deviation among schools for organizational learning is 1.07. A movement from a moderately low professional community school (1 *SD* below the mean) to a moderately high one (1 *SD* above the mean) involves a shift of about 1.6 points on the 10-point professional community composite scale. All other factors being held constant, this would have a predicted effect on organizational learning of 1.4 *SD*.

With the professional community composite in the model, faculty trust was the only facilitating factor that was significantly related to the organizational learning outcome. However, this negative relationship appears anomalous. The zero-order correlation between organizational learning and teacher trust at the school level is actually positive and modestly strong (.57). Given that teacher trust is also correlated with a number of the other school-level predictors, this finding is probably not meaningful.

In sum, the results from this second set of models suggest that when internal professional structures and faculty norms are in place, a climate often develops in which faculty are encouraged to seek out and perhaps even try new ways of teaching. Given this connection, our results lead us to suspect that if professional community in fact fosters instructional change, it does so by creating an environment that supports teacher learning through innovation and experimentation.

## DISCUSSION

Our study is the first to document that some of the organizational features identified in earlier research can exist on a broad scale in regular urban elementary schools. This study also yielded suggestive evidence that such organizational features provide a supportive environment for instructional innovation. Although this study does not go the next step and directly examine the effects of professional community on student achievement, the

connection between professional community and student achievement has been documented elsewhere (Louis & Marks, 1998). Analyses of large-scale national data sets have also established a connection between collective responsibility and student learning at the high school level (Lee & Smith, 1996). We intend to examine this further in future research as data on trends in student achievement under Chicago school reform become available.

On balance, we know that efforts specifically designed both to stimulate professional community and to improve classroom practices typically confront very uneven local school circumstances (e.g., see Bryk, Rollow, & Pinnell, 1996). In a conducive setting, a significant segment of the faculty will embrace these ideas, be supported by their principal, and over time be able to influence other colleagues to join them in reflective discussions and collaborative work. In other settings, however, teachers who do not want to disturb the status quo may actively oppose change, and school leadership may remain ineffective. These schools may be balkanized, with some teachers resenting the additional demands that restructuring entails and not wishing to change the extant norms of virtually unimpeded classroom autonomy. Where these conditions—which are fairly common—exist, variation in the proportion of teachers engaging in collegial activity within schools will remain great.

Against this backdrop, the modest between-school variance component on professional community reported in this study seems quite reasonable. Whereas it marks out the current state of affairs in urban elementary schools, it does not in any sense delimit the potential of this set of ideas to transform school practice. Only the actual experience of schools seeking to work with these ideas over some sustained period of time can tell us about this.

Perhaps the most important and hopeful conclusion to be drawn from this research is that a professional community can exist in very ordinary urban schools. Moreover, positive teacher reports about professional community came from a wide cross-section of schools. Student-body composition in terms of race and ethnicity, socioeconomic factors, and even academic background was not a strong predictor of a school's professional community.

The results presented in this article also underscore the importance for small school size as a key structural facilitator. Small school size affords a context in which many of the social resources discussed above can more readily emerge and flourish. Because smaller schools are easier to manage, effective principal leadership, not surprisingly, is also easier to exercise. Because teachers have opportunities for face-to-face social interactions with most other members of their school faculty, a broad base of social trust is more likely. Socialization of new members can also be handled through personal mentoring rather than more formal orientation programs. In general, both a commonality of purpose and base of personal regard is more likely in a small

school, and this in turn facilitates the emergence and maintenance of a professional community. As noted earlier, however, small size does not cause professional community. A small school can be just as problematic a work environment as a large one. A small school, however, does afford opportunities to school-based actors that are not as readily accessible to their counterparts in large schools. It is in this sense that small school size is a key structural facilitator.

In terms of future research, it is important to focus more attention on how such school-based professional communities actually emerge and are sustained. Although the research presented here offers several clues about facilitating factors in this regard, a true longitudinal study of the school change process would afford a more rigorous test of these hypotheses. It would also expand our understanding of the actual processes involved as schools move from a typical base state of hierarchical domination to one of collective faculty enablement organized around more challenging academic work for all students.

#### APPENDIX A Psychometric Statistics for Outcome Variables

##### *Components of Professional Community*

<i>Measure/Item (person reliability in parentheses)</i>	<i>Infit Mean Square</i>	<i>Difficulty</i>
<i>Deprivatized practice (.70)</i>		
This school year, how often have you:		
Invited someone in to help teach your class(es)	1.21	8.83
Had colleagues observe your classroom	0.90	6.97
Received meaningful feedback on your performance from colleagues	0.85	6.40
Visited other teachers' classrooms	1.10	6.23
Received useful suggestions for curriculum materials from colleagues	0.96	4.88
<i>Staff collegiality/collaboration (.75)</i>		
Teachers design instructional programs together	0.79	5.31
Teachers at this school make a conscious effort to coordinate their teaching with instruction at other grade levels	0.83	5.24
The principal, teachers, and staff collaborate to make this school run effectively	1.24	4.44
Most teachers at this school are cordial	1.11	3.48
<i>Reflective dialogue (.85)</i>		
This school year, how often have you had conversations with colleagues about the goals of this school	0.84	6.71
This school year, how often have you had conversations with colleagues about development of new curriculum	0.88	6.68
Faculty meetings are often used for problem solving	1.10	5.55

*(continued)*



## APPENDIX A Continued

<i>Measure/Item (person reliability in parentheses)</i>	<i>Infit Mean Square</i>	<i>Difficulty</i>
This school year, how often have you had conversations with colleagues about managing classroom behavior	1.00	4.61
This school year, how often have you had conversations with colleagues about what helps students learn best	0.77	4.47
We do a good job of talking through views, opinions and values	1.12	4.45
Many teachers express their personal views at faculty meetings	1.21	4.14
Teachers in this school regularly discuss assumptions about teaching and learning	0.98	3.69
Teachers talk about instruction in the teachers' lounge, faculty meetings, etc.	0.98	2.07
Focus on student learning (.84)		
When making important decisions, the school always focuses on what's best for student learning	0.85	4.31
This school has well-defined learning expectations for all students	0.71	4.23
This school sets high standards for academic performance	0.88	4.14
The school day is organized to maximize instructional time	0.93	3.92
How many teachers in this school feel responsible that all students learn	1.55	2.80
Collective responsibility for school operations and improvement (.90)		
How many teachers in this school feel responsible to help each other do their best	.77	3.21
How many teachers in this school take responsibility for improving the school	1.01	3.18
How many teachers in this school help maintain discipline in the entire school, not just their classroom	.88	3.18
At this school, teachers work together to do what is "best for the kids"	.94	2.53
How many teachers in this school set high standards for themselves	.81	2.21
Teachers support the principal in enforcing school rules	1.35	2.10
Teacher socialization (.60)		
Experienced teachers invite new teachers into their rooms to observe, give feedback, etc.	.91	1.11
A conscious effort is made by faculty to make new teachers feel welcome here	1.03	-1.11
<i>A Measure of Organizational Learning</i>		
<i>Measure/Item (person reliability in parentheses)</i>	<i>Infit Mean Square</i>	<i>Difficulty</i>
Organizational learning (.78)		
How many teachers in the school are willing to take risks to make this school a better place	0.92	3.49
How many teachers in the school are eager to try new ideas	0.79	3.31
Teachers have a "can-do" attitude	0.97	3.02
All teachers are encouraged to "stretch and grow"	1.30	2.65
Teachers are continually learning and seeking new ideas	0.87	2.53

## APPENDIX B

### Statistical Models

---

Two different three-level hierarchical linear models were used for these analyses: one that modeled a composite measure of professional community and another that modeled the correlates of professional community. The models for the composite measure are discussed first.

At Level 1, we start with a model in which scores on component measures  $i$  for teacher  $j$  in school  $k$  are used to predict a “true score” on a professional community composite.

$$Y_{ijk} = \pi_{ijk} + e_{ijk}; e_{ijk} \approx N(0, \sigma_{ijk}^2) \quad (1)$$

where  $Y_{ijk}$  is a Rasch person measure for one of the four component measures of professional community for teacher  $j$  in school  $k$ ,  $\pi_{ijk}$  is the “true” value of the professional community composite, and  $e_{ijk}$  is a random effect that represents the deviation of teacher  $jk$ 's outcome measure from that predicted by the Level 1 model.

In most linear modeling applications, we assume that measurement error,  $e_{ijk}$ , is unknown and normally distributed with mean 0 and some constant variance. However, the standard errors estimated for each Rasch outcome measure,  $s_{ijk}$ , permit us to explicitly address measurement error in our model. Specifically, we adjusted the component measures for their unreliability by multiplying both sides of Equation 1 by the inverse of the standard error estimates for each component  $a_{ijk} = s_{ijk}^{-1}$ , so that

$$Y_{ijk}^* = a_{ijk} \pi_{ijk} + e_{ijk}^*; e_{ijk}^* \approx N(0, 1) \quad (2)$$

Note that when we adjust for measurement error,  $\sigma^2$  is fixed at 1.

At Level 2, teachers' “true scores” are modeled as a function of a set of teacher-level characteristics,  $X_{pj}$ . Individual teacher variation in the “true scores” is captured in  $r_{jk}$ , which is assumed to be normally distributed with mean 0 and variance  $T_\pi$ .

$$\pi_{jk} = \beta_{0k} + \sum_{p=1}^P \beta_{pk} (X_{pj} - \bar{X}_{p.}) + r_{jk}; r_{jk} \approx N(0, T_\pi) \quad (3)$$

By centering the teacher-level predictors about their grand means,  $\beta_{0k}$  becomes the predicted mean for school  $k$  if it had an “average” faculty composition as measured by the predictor variables. The relationship between these  $p = 1 \dots P$  predictors and the outcome are captured in  $\beta_{pk}$ .

At Level 3, the adjusted school means,  $\beta_{0k}$ , are modeled as a function of school characteristics

$$\beta_{0k} = \gamma_{00} + \sum_{q=1}^Q \gamma_{0q} W_{qk} + u_{0k}; u_{0k} \approx N(0, T_\beta) \quad (4)$$

where  $\gamma_{00}$  is the estimated grand mean of the professional community composite adjusted for measurement error and faculty composition,  $\gamma_{0q}$  are  $q = 1 \dots Q$  coefficients expressing the relationship between school characteristics and professional community, and  $u_{0k}$  is individual variation attributable to school  $k$ .

The Level 1 equation used to predict organizational learning was slightly different than that used for the composite measure. Because the organizational learning measure has only one component,  $\pi_{jk}$  represents a teacher's "true score" on a single measure rather than on a composite. Thus, by dropping the subscript for the component measures from (2), the Level 1 model becomes

$$Y_{jk}^* = a_{jk}\pi_{jk} + e_{jk}^*; e_{jk}^* \approx N(0, 1) \quad (5)$$

The equations for Levels 2 and 3 remain the same.

## APPENDIX C Independent Variables

### Teacher Characteristics

*Female* is a dummy variable coded 1 if teacher is female.

*Black* is a dummy variable coded 1 if teacher is African American.

*Hispanic* is a dummy variable coded 1 if teacher is Hispanic.

*Teacher involvement* is a variable that indicates how involved teachers are in the social lives of their schools. It was constructed by taking the log of the sum of the number of hours teachers spent on a number of different committees and subcommittees, special events, and celebrations outside of class during a typical week.

*Teacher experience* is the total number of years teachers have taught.

### School Context

*Pre-reform achievement* is the log of the mean value of the school's 1988-1989 Illinois Goal Assessment Program (IGAP) scores in third-, sixth-, and eighth-grade reading and math.

*Enrollment stability rate* is the log odds of the proportion of students who took the Iowa Test of Basic Skills (ITBS) in school in the spring of 1993 who were also tested in the school in spring 1994.

*Neighborhood poverty* indicates the level of poverty in the neighborhood in which the school is located. It was constructed by taking the mean of four variables. The first two variables are concentration of poverty indexes computed for the school's neighborhood and the neighborhoods of attending students. Each index was formed by averaging the proportion of males 16 years or older who are unemployed and the proportion of residents living below the poverty line. The

other two variables included in the neighborhood poverty measure are the proportion in the school's neighborhood who do not own their home and the proportion from the neighborhoods of students attending the school who do not own their own home. All indexes used to construct this variable come from the 1990 U.S. Census.

*Neighborhood stability* is a composite indicator of residential stability in the neighborhoods in which schools are located. It was constructed by taking the mean of the following: average years tenancy for home owners and renters in the school's neighborhood, and average years tenancy for home owners and renters in the neighborhoods of students attending the school. All indexes used to construct this variable come from the 1990 U.S. Census.

### School Composition

*Proportion of female faculty* is a variable that was constructed by taking the log of the quantity  $(p / 1 - p)$  where  $p$  is the proportion of female faculty members in the school as reported on the questionnaire.

*Faculty stability* as a variable was created by taking the log odds of the proportion of teachers who have been at their current school for 5 or more years.

*Integrated student body* is a dummy variable that is coded 1 if the percentage of White students in the school is greater than 30%.

*Primarily African American student body* is a dummy variable that is coded 1 if the percentage of African American students in the school is greater than 85%.

*Primarily African American faculty* is a dummy variable that is coded 1 if the percentage of African American teachers in the school is greater than 65%.

*Primarily White faculty* is a dummy variable that is coded 1 if the percentage of White teachers in the school is greater than 65%.

### Facilitating Factors

*Small school* is a dummy variable coded 1 if the number of students enrolled in the school in 1993 was less than 350.

*Principal supervision* is the mean of two questionnaire items aggregated to the school level: To what extent do you agree or disagree that the principal visits classrooms regularly, and to what extent do you agree or disagree that the principal closely supervises teachers' work.

*Facilitative principal leadership* is a 10-item Rasch measure that indicates whether teachers view the principal as a facilitative, inclusive, committed leader. Teachers were asked about the extent to which their principal's leadership facilitated parental and community involvement, instructional improvement, and creating a sense of community in the school.

*Teacher trust* is a 6-item Rasch measure that indicates the extent to which teacher relationships within a school are characterized by trust and respect. Teachers reported whether most teachers really care about each other; whether it is okay to discuss feelings, worries, and frustrations with colleagues; and whether teachers respect others who take initiative in school improvement efforts.

## NOTES

1. The Consortium on Chicago School Research is committed to pluralistic inquiry. All data collected by the consortium are made available to other investigators in easy-to-access public use data sets. A CD diskette containing all of the surveys completed to date, some system-level information and corresponding code books, and SAS code are available from the consortium. A modest fee is charged to cover reproduction costs.

2. The reliability of the teacher socialization scale, which contains only two items, was .60 whereas the reliabilities of all other scales were .70 or higher.

3. Other analyses revealed similar amounts of between-school variation in the component measures of professional community. Specifically, the proportion of variance between schools was .17 for focus on student learning, .12 for reflective dialogue, and .15 for deprivatized practice. Interestingly, more than one fourth (.27) of the variation in the collegiality/collaboration measure fell between schools.

4. Some teachers in our sample lacked data on gender, race, and teacher experience. Because the program that estimates three-level HLMs does not tolerate missing data at Levels 2 and 3, a series of dummy variables that indicated teachers were missing on these predictors were created. Specifically, when teachers were missing on one of the three predictors, the variable itself was coded zero and the corresponding missing data dummy variable was coded one. In essence, we have added another category, "don't know," to each variable.

## REFERENCES

- Abbott, A. (1991). The order of professionalization: An empirical analysis. *Work and Occupations, 18*, 355-384.
- Bender-Sebring, P., Bryk, A. S., & Easton, J. Q. (1995). *Charting reform: Chicago teachers take stock*. Chicago: Consortium on Chicago School Research.
- Bryk, A. S., & Driscoll, M. E. (1988). *The school as community: Theoretical foundations, contextual influences, and consequences for students and teachers*. Chicago: Center for School Improvement at the University of Chicago.
- Bryk, A. S., Easton, J. Q., Kerbow, D., Rollow, S. G., & Sebring, P. A. (1993). *A view from the elementary schools: The state of reform in Chicago*. Chicago: Consortium on Chicago School Research.
- Bryk, A. S., Lee, V. E., & Holland, P. B. (1993). *Catholic schools and the common good*. Cambridge, MA: Harvard University Press.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury, CA: Sage.
- Bryk, A. S., Rollow, S. G., & Pinnell, G. (1996). Urban School improvement: Literacy as a lever for change. *Educational Policy, 10*(2), 9, 172-201.
- Bryk, A. S., & Schneider, B. (1996, August). *Social trust: A moral resource for school improvement*. Paper presented at 1996 meeting of the American Sociological Society, Washington, DC.
- Chicago School Reform Act. Public Act 85-1418 (1988).
- Coleman, J. S., Hoffer, T., & Kilgore, S. (1982). *High school achievement: Public, Catholic, and private schools*. New York: Basic Books.

- Corcoran, T., Walker, L., & White, J. L. (1988). *Working in urban schools*. Washington, D.C.: Institute for Educational Leadership.
- Darling-Hammond, L. (1987). Schools for tomorrow's teachers. *Teachers College Record*, 88(3), 354-358.
- Darling-Hammond, L., & Goodwin, A. L. (1993). Progress towards professionalism in teaching. In G. Cawelti (Ed.), *Challenges and achievements of American education: The 1993 ASCD yearbook* (pp. 19-52). Alexandria, VA: Association for Supervision and Curriculum Development.
- Darling-Hammond, L., & Snyder, J. (1992). Framing accountability: Creating learner centered schools. In A. Lieberman (Ed.), *The changing contexts of teaching* (91st Yearbook of the National Society for the Study of Education, Vol. 1; pp. 11-36): Chicago.
- Dewey, J. (1900). *The school and society*. Chicago: University of Chicago Press.
- Driscoll, M. E. (1989). *The school as community*. Unpublished doctoral dissertation, University of Chicago.
- Duncan, R., & Weiss, A. (1979). Organizational learning: Implications for organizational design. *Research In Organizational Behavior*, 1, 75-124.
- Englert, R. (1993). Understanding the urban context and conditions of practice of school administration. In P. Forsyth & M. Tallerico (Eds.), *City schools: Leading the way*. Newbury Park, CA: Corwin Press.
- Firestone, W. A., & Rosenblum, S. (1988). Building commitment in urban high schools. *Educational Evaluation and Policy Analysis*, 93, 285-299.
- Hallinger, P., & Murphy, J. (1986). The social context of effective schools. *American Journal of Education*, 94, 328-355.
- Hargreaves, A. (1992). *Restructuring: Postmodernity and the prospects for educational change*. Unpublished Manuscript.
- Hargreaves, A. (1994). *Changing teachers, changing times: Teachers' work and culture in the postmodern age*. New York: Teachers College Press.
- Hawley, A. H. (1950). *Human ecology: A theory of community structure*. New York: Ronald.
- Hess, G. A. (1991). *School restructuring Chicago style*. Newbury Park, CA: Corwin Press.
- Hirschman, A. O. (1970). *Exit, voice, and loyalty: Responses to decline in firms, organizations, and states*. Cambridge, MA: Harvard University Press.
- Hofstede, G. (1991). *Cultures and organizations: Software of the mind*. New York: McGraw-Hill.
- Huberman, M. (1995). Research utilization: The state of the art. *Knowledge and Policy*, 1(4), 113-133.
- Kruse, S. D., Louis, K. S., & Bryk, A. S. (1995). An emerging framework for analyzing school-based professional community. In K. S. Louis & S. D. Kruse (Eds.), *Professionalism and community: Perspectives on reforming urban schools* (pp. 2342). Thousand Oaks, CA: Corwin Press.
- Lee, V. E., & Smith, J. (1996, February). Collective responsibility for learning and its effects on gains in achievement and engagement for early secondary students. *American Journal of Education*, 104, 103-147.
- Lee, V. E., Smith, J., & Bryk, A. S. (1993). The organization of effective secondary schools. *Review of Research in Education*, 19.
- Lieberman, A. (1988). *Building a professional culture in schools*. New York: Teachers College Press.
- Lieberman, A., Saxl, E. R., & Miles, M. B. (1988). Teacher leadership: Ideology and practice. In A. Lieberman (Ed.), *Building a professional culture in schools* (pp. 148-166). New York: Teachers College Press.

- Little, J. W. (1982). Norms of collegiality and experimentation: Workplace conditions of school success. *American Educational Research Journal*, 19(3), 325-340.
- Little, J. W. (1990). The persistence of privacy: Autonomy and initiative in teachers' professional relations. *Teachers College Record*, 91(4), 509-536.
- Louis, K. S. (1992). Restructuring and the problem of teachers' work. In A. Lieberman (Ed.), *The changing contexts of teaching* (91st Yearbook of the National Society for the Study of Education, Vol. 1; pp. 138-156). Chicago.
- Louis, K. S. (1994). Beyond "managed change": Rethinking how schools improve. *School Effectiveness and School Improvement*, 5(1), 2-24.
- Louis, K. S. (1998). Effects of teacher quality of work life in secondary schools on commitment and sense of efficacy. *School Effectiveness And School Improvement*, 9(1), 1-27.
- Louis, K. S., Kruse, S., & Raywid, M. (1996). Putting teachers at the center of reform. *NASSP Bulletin*, 80(580), 9-21.
- Louis, K. S., & Marks, H. (1998). Does professional community affect the classroom? Teachers' work and student experiences in restructured schools. *American Journal of Education*, 106(4), 532-575.
- Louis, K. S., & Miles, M. (1990). *Improving the urban high school: What works and why*. New York: Teachers College Press.
- Murphy, J. (1989). A new era in the professional development of school administrators: Lessons from emerging programmes. *Journal of Educational Administration*, 27(2), 22-45.
- Murphy, J. (1994). Transformational change and the evolving role of the principal. In J. Murphy & K. S. Louis (Eds.), *Reshaping the principalship: Insights for transformational reform efforts* (pp. 20-56). Thousand Oaks, CA: Corwin.
- Newmann, F. M. (1991). Linking restructuring to authentic student achievement. *Phi Delta Kappan*, 72, 458-463.
- Newmann, F. M., & Wehlege, G. (1995). *Successful school restructuring*. Madison, WI: University of Wisconsin.
- Putnam, R. D. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton, NJ: Princeton University Press.
- Raywid, M. (1995). Professional community and its yield at Metro Academy. In K. S. Louis & S. D. Kruse (Eds.), *Professionalism and community: Perspectives on reforming urban schools* (pp. 45-75). Thousand Oaks, CA: Corwin.
- Rollow, S., & Bryk, A. S. (1993). The Chicago experiment: The potential and reality of reform. *Equity and Choice*, 9(3), 22-32.
- Rosenblum, S., Louis, K. S., & Rossmiller, R. (1994). School leadership and teacher quality of work life in restructuring schools. In J. Murphy & K. S., Louis (Eds.), *Reshaping the principalship: Insights from transformational reform efforts*. Thousand Oaks, CA: Corwin Press.
- Rowan, B. (1993). Teaching as a nonroutine task: Implications for the management of schools. *Educational Administration Quarterly*, 29(4), 479-500.
- Rowan, B. (1994). Comparing teachers' work with work in other occupations: Notes on the professional status of teaching. *Educational Researcher*, 23(6).
- Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday.
- Sergiovanni, T. J. (1992). *Moral leadership: Getting to the heart of school improvement*. San Francisco: Jossey-Bass.
- Shakespeare, C. (1987). *Women in educational administration*. Newbury Park, CA: Sage.
- Spillane, J. P., & Thompson, C. L. (1997). Reconstructing concepts of local capacity: The local education agencies' capacity for ambitious instructional reform. *Education Evaluation and Policy Analysis* 19(2).

- Squires, J. D. (1988). *Chicago schools: Worst in America* (Preface). Chicago: R.R. Donelley & Sons.
- Tannen, D. (1994). *Talking from 9 to 5*. New York: Munro.
- Tonnies, F. (1887). *Gemeinschaft und Gesellschaft* [Community and society]. Leipzig, Germany: R. Reisland.
- Weber, M. (1947). *Theory of social and economic organization*. (A. M. Henderson & T. Parsons, Trans.). New York: Macmillan.
- Weisbord, M. (1991). *Productive workplaces: Organizing and managing for dignity, meaning and community*. San Francisco: Jossey-Bass.
- Wright, B. D., & Masters, G. N. (1982). *Rating scale analysis*. Chicago: MESA Press.