The Effects of Leadership on Student Performance in DSSF Pilot Middle Schools

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Summary of Key Findings

The present study offers some important initial findings concerning the impact of leadership and related variables upon a middle school’s overall level of student achievement. First, the degree to which a principal engages in shaping the core instructional processes in a school – that is, exercises influence over the curriculum actually taught, methods of instruction, and the use of assessment to monitor students’ progress and to adjust instruction – does exert a significant impact on student learning in the school. But this effect is quite small – the equivalent of about 2/3 of a percentage point on middle schools’ composite index per year for each one-point increase on a five point scale. In effect size terms, principals’ effects on the performance composite index is approximately 0.054. This represents the average difference that the degree of principals’ involvement in shaping core instructional processes made in a single year, across the 80 middle schools in our study. An especially skilled, energetic, and proactive principal may make a much larger difference in a given initially low-performing school. But to expect that changes in principal leadership will make a large difference across the whole system of public education in North Carolina is probably not realistic. Improvements in principal leadership can help, but to make major improvements on a system-wide basis, policy makers will need to employ a variety of other approaches as well.

Second, strengthening professional community and teachers’ trust of their principals do not contribute directly to the improvement of a school’s overall level of performance but may build support for a principal to play a stronger role in shaping the school’s curricular, instructional, and assessment processes, which does contribute to the improvement of school-wide performance. Thus, building professional community is compatible with and perhaps even necessary for strengthening principals’ influence over core processes. Indeed, stronger professional community may well facilitate stronger efforts to shape the core processes.

Yet stronger professional community in the absence of stronger efforts to shape the school’s core processes – which for brevity’s sake we sometimes refer to simply as “stronger instructional leadership” – does not appear to improve school performance. Nor does teacher-principal trust by itself seem to contribute directly to improved performance. Rather, professional community and trust may enable stronger instructional leadership, which does contribute to better performance, albeit modestly. Further, stronger professional community and higher levels of teacher-principal trust do build stronger teacher commitment to a school and its goals, but perhaps surprisingly, this increased commitment does not appear to translate into improved performance, even through the indirect route of strengthening principals’ instructional leadership.

All this being said, the nexus of organizational commitment, professional community, and trust do seem to go with a stronger role for principals in instructional leadership, and instructional leadership does make a modest contribution to the improvement of student achievement levels in a middle school. Strengthening this complex of leadership-related variables could contribute to an overall improvement in the performance of North Carolina’s schools, but policy makers should not count on better leadership alone to assure that all of our students get an equal opportunity for a sound basic education. For that, a much broader array of policy interventions will be required.
Introduction

In 2004, Governor Mike Easley and the North Carolina State Board of Education established the Disadvantaged Student Supplemental Fund (DSSF) as a pilot program in 16 of the state’s most educationally disadvantaged districts. The overarching goal of the program was to increase the learning and academic performance of students, especially academically disadvantaged students. During the 2004-05 school year, the program provided $22.4 million in additional funds to the pilot districts. The program allowed districts flexibility in using the funds to attract and retain qualified, competent teachers and to provide enhanced instructional opportunities to students at risk of school failure. The NC Department of Public Instruction (DPI) was required to provide assistance and monitor the program through the Local Education Agency Assistance Program (LEAAP).

The pilot program continued with slightly increased funding for the 2005-06 school year. In 2006-07, the Governor recommended expanding the program statewide, and the General Assembly appropriated $49.5 million for this purpose. The original 16 pilot districts continued to receive the same amount of funding per pupil as they received in the first two year, but the remainder of the state’s districts received approximately $88 per academically disadvantaged pupil.

In 2005, before the statewide expansion, the General Assembly mandated an evaluation of the effectiveness of the strategies funded by the DSSF program, as well as the effectiveness and efficiency of DPI’s LEAAP teams. The team carrying out the evaluation is based primarily at the University of North Carolina at Chapel Hill, with participation by researchers at East Carolina University and Georgia State University. This is one in a series of reports from the research team.

In two earlier reports, we showed that the DSSF pilot exerted a positive effect on high school students’ test scores and on the rate of student learning in middle school, but thus far we have been unable to explain exactly how the program brought about these improvements. One set of variables commonly proposed to explain school to school variations in performance concern school leadership and the organizational conditions that effective principals foster within their schools. This report presents the results of our research on the link between selected leadership and organizational variables upon student test performance in a sample of North Carolina middle schools.

An exhaustive treatment of all potentially important links among leadership, associated organizational conditions, and student performance is well beyond the scope of any single study. So we focused on a small number of factors that prior research suggested might be especially important and that we could devise ready means of measuring and modeling. These factors include (1) actions that principals take to shape core processes of curriculum, instruction, and monitoring student progress, (2) the degree to which teachers in a school trust their principal, (3) the strength of professional community among teachers, and (4) the degree to which teachers in the school are committed to the school and its success. As the foregoing Summary of Key Findings section indicated, we found that principals’ role in shaping core processes does affect student outcomes to a substantively meaningful degree, and the other three factors are closely
associated with such instructional leadership, but this complex of factors do not explain the impact of the DSSF pilot program.

In the next section, we outline the research literature that guided our investigation. Then we describe the methods we used to measure and assess the impact of the variables we chose to treat in this study. Having established this background, we present our findings in detail and draw out their implications for policy, practice, and further research.

Prior Research on Leadership, Organizational Conditions, and Student Learning

There is evidence that school leadership makes a small but measurable and significant contribution to schools’ academic productivity (Hallinger & Heck, 1996a; Leithwood & Riehl, 2003). Virtually all early research on connections between leadership and student outcomes relied on simple direct effects models. These revealed small and inconsistent effects, if any (Hallinger & Heck, 1996a, 1996b; Witziers, Bosker, & Kruger, 2003). More fully specified indirect models—especially those that include contextual as well as mediating variables—reveal small but consistent effects. In these models, leadership accounts for about 3-4% of the total variance in student outcomes, or about a quarter of the total variance in student outcomes that is explained by school-related variables (Hallinger & Heck, 1996a, 1996b; Leithwood & Riehl, 2003; Scheerens & Bosker, 1997). As Purkey and Smith as well as others have pointed out, however, even such apparently small statistical effects can have a major impact on students’ learning over their school careers (Brandsma & Doolard, 1996; Purkey & Smith, 1983): the difference between the achievement of an average student coming through an effective versus an ineffective elementary school is equivalent to a full school year’s learning (Purkey & Smith, 1983). Further, large-scale quantitative studies reporting average effects across a broad range of schools may underestimate the effects of leadership on the improvement of schools with disadvantaged student populations (Leithwood & Riehl, 2003).

The key functions through which principal leadership appears to shape student outcomes include setting directions, selecting and developing teachers, establishing supportive conditions, and shaping core processes. Below we summarize the literature on all four of these broad functions in order to provide a general context for the present study, but the range of variables examined in the literature is far too wide to address in a single modestly funded study. So as previously indicated, for this survey-based study we chose to focus on a particularly promising subset of variables for which good measures were not available in existing administrative data: (1) organizational commitment, addressed below within the subsection on setting directions; (2) teacher-principal trust and (3) professional community, which are addressed below within the subsection on establishing supportive conditions; and (4) shaping core processes, to which an entire subsection is devoted.

Setting Directions

The impact upon student outcomes of principals’ leadership in setting directions is the most thoroughly supported finding on the leadership-outcomes relationship (Hallinger & Heck, 1996b; Leithwood & Riehl, 2003; Scheerens & Bosker, 1997). Principals set directions not simply by articulating and communicating a vision and goals for the school but by helping their staffs
develop a common understanding about what they are trying to achieve and why (Hallinger & Heck, 2002). Further, our own recent research in NC high schools emphasizes the importance of following through on goal setting by actively holding both groups and individual teachers accountable for outcomes and by using assessment data to motivate and guide continuous improvement of instruction (Henry & Thompson, with others, 2008; Thompson, Brown, Cunningham, & Montrosse, 2008). We found that principals of schools with disadvantaged student populations that outperformed expectations were able to assert accountability authoritatively while also building strong organizational commitment among teachers.

It was the combination of authoritative accountability with high organizational commitment that gave the school goals an animating force throughout these schools. The main components of organizational commitment are (1) identification with the school and its goals, (2) willingness to expend extra effort in pursuit of these goals, (3) a strong desire to maintain membership in the organization, and (4) a corresponding willingness to be governed by the values and norms of one’s colleagues (Mowday, Porter, & Steers, 1982). In our NC study, effective principals promoted organizational commitment by constructing a positive image of the school, modeling commitment and competence in their own work, and extending and reciprocating trust with teachers. Bryk and Schneider (2002) reported similar findings on the contribution of trust to organizational commitment in schools. Kushman (1992) found that teachers’ organizational commitment is strongly associated with high school student outcomes – more so, in fact, than teachers’ commitment to student learning.

Selecting, Developing, and Assigning Teachers

Two major reviews of the literature have identified the selection and development of teachers as a key mechanism through which school leadership does or can shape student outcomes (Leithwood & Riehl, 2003; Scheerens & Bosker, 1997). There is substantial evidence that teacher quality exerts a significant impact on student outcomes (see Darling-Hammond, 2000; Future of Children, 2007; Goldhaber, 2002; Harris & Sass, 2007; Hanushek, 2002; King-Rice, 2003; Nye, Konstantopoulos, & Hedges, 2004; Rockoff, 2004). Some see this as tending to eclipse the contribution of leadership, but in most school districts, principals have considerable latitude in recruiting, selecting, assigning, and evaluating teachers. In our own study of NC high schools, teachers identified the principal’s leadership as a key factor in their recruitment to the school and commitment to stay there (Henry & Thompson with others, 2008). The principal played both a direct role in recruitment and an indirect role, by creating an attractive working environment. Principals of schools that were outperforming expectations also emphasized recruiting good teachers and “weeding out” ineffective ones as essential to their schools’ performance. In addition, they assigned teachers whose students scored well on tested courses to teach them regularly, while balancing these assignments with other courses, such as honors or advanced placement courses that could be considered more desirable.

In a review of research on connections between professional development (PD) and student outcomes in mathematics, Kennedy (1999) found that it is the content of professional development that distinguishes effective PD. Activities that focused on the specific mathematical content to be taught and learned, on how students learn it, and on how to teach it proved effective in helping teachers improve students’ mathematics scores. PD on general
teaching techniques not closely linked to the subject matter produced only small or negligible results. Cohen & Hill’s research on PD designed to improve mathematics education in California supported Kennedy’s conclusions and added that it also helps to link PD to the specific curricular units being taught and to the state mathematics assessment (Cohen & Hill, 2001). Porter, Garet, Desimone, Yoon, & Birman (2000) concurred and added the importance of coherence and active learning. “Coherent” PD connects not only with state and district standards and assessments, but also with the teacher’s own goals, with prior and subsequent PD, and teachers’ colleagues. “Active learning” entails opportunities to plan, observe, or practice the recommended approaches, get feedback, review and discuss student work, and reflect on the results of these activities with others. Principals can influence if not dictate both the substance and the form of PD in directions consistent or inconsistent with these findings. Teacher development also includes fostering professional community, addressed in the next section.

Establishing Supportive Conditions

Although available evidence clearly indicates that variables closely related to instruction exert far more influence on student learning outcomes than do more distal variables, there is some evidence and a reasonably persuasive argument that certain features of the organizational environments for teachers and for students influence student learning.

Environment for Teachers

In the environment for teachers, research points to four distinct but interrelated constructs: participatory site-based decision making, distributed leadership, professional community, and relational trust. Participatory decision making is thought to promote buy-in to integrate individuals’ values, interests, and aspirations with the organization’s goals and plans. In education, it has found empirical support in research literatures on effective schools (Purkey & Smith, 1983), implementation (Berman & McLaughlin, 1975), and change processes (Fullan, 2001). Lee & Smith found that teachers’ sense of control over decision making makes only a modest direct contribution to learning outcomes but exerts indirect effects by strengthening teachers’ sense of collective responsibility for student learning (Lee & Smith, 1996). Smylie and his colleagues found a similar indirect effect, operating via increased professional accountability and teacher learning opportunities (Smylie, Lazarus, & Brownlee-Conyers, 1996).

The premise of distributed leadership is that leadership comprises a set of functions that can be carried out by people occupying a variety of formal and informal roles distributed across an organization (Camburn, Rowan, & Taylor, 2003; Ogawa & Bossert, 1995; Spillane, Hallett, & Diamond, 2003; Spillane, Halverson, & Diamond, 2001). Leadership may be distributed through formal delegation, informal emergence, or a mix of the two. Drawing on cognitive science notions of distributed intelligence, Spillane et al. (2003) characterize the configuration of de facto leaders as fluid, shifting over functions and time, and implicating tools and systems as well as people. Camburn et al. (2003) focused on the formal distribution of functional tasks entailed in three CSR Models and found that a combination of clear specification, training and follow-up support, and teamwork among leaders produced decisively higher levels of enacted instructional leadership in adopting than in control schools.
To date, little evidence exists linking distributed leadership to student outcomes. But effective distribution of leadership may play an important role in high schools, where subject matter disciplines and departments often pose impediments to the emergence of school-wide professional community (Siskin, 1994; Siskin, 2004, Siskin & Little, 1995). Yet disciplines and departments also offer potentially productive contexts for a network of leaders to organize professional community around commonly held subject matter knowledge, ideas about how the subject matter can be taught and learned, identifications with the discipline, and views of students’ struggles with the subject matter (McLaughlin & Talbert, 2001). In the most effective NC high schools we studied, the principals clearly recognized this potential (Thompson et al., 2008). Some appointed especially effective teachers to head teams for each course tested in the state’s accountability system and charged the teams with collective responsibility for improving scores. Principals met with them regularly to assert accountability, track progress, and prompt sharing of workable approaches; assigned team leaders and teams responsibility for working out specific curricular and instructional improvements. This division of responsibilities mirrors that found by Camburn and his colleagues (2003). By organizing such teams and using departmental structures in similar ways, these principals promoted the emergence of discipline-based professional communities.

Distinguishing features of professional community in education include a shared technical knowledge base, associated norms of professional practice, precedence of students’ needs over teachers’ own interests, collective responsibility for student welfare and outcomes, and caring relationships with professional colleagues and students (Kruse & Louis, 1993). The primary mechanisms through which professional community is assumed to improve student outcomes are normative controls over teachers’ goals and practice, and collaborative work on non-routine problems. Newmann and his colleagues found that professional community can indeed contribute to instructional improvement (Newmann & Wehlage, 1995; Newman & Associates, 1996). Rowan (1990) argued that “organic,” commitment-based controls and ongoing collaborative search for solutions are more appropriate than administrative controls in fields such as education, with diffuse, multiple goals and an uncertain core technology. Yet O’Day (2002) cited evidence that under certain conditions administrative and professional “accountability” (norm-based controls) are not only compatible, but actually complementary and mutually necessary. According to Louis, Marks, & Kruse (1996), the factors that promote professional community include both structural (e.g., delegated responsibility for decision-making, shared planning time, de-specialization) and human resource variables (e.g., respect). Louis and her colleagues argue that most of these factors are manipulable via policy or administrative practice, a contention supported in Bryk & Schneider’s (2002) work on relational trust.

Relational trust stems from reciprocity in mutual obligations and expectations between people in certain role relationships, such as those between teachers and principals, teachers and other teachers, and teachers and students (Bryk & Schneider, 2002). Even in asymmetric role sets (principal-teacher, teacher-student), each depends on and is vulnerable to the other. When these vulnerabilities are recognized and handled with respect, competence, personal regard, and integrity, relational trust is built. Bryk & Schneider (2002) argue that relational trust serves as a resource for school improvement by reducing the uncertainty and vulnerability inherent in making change, reducing transaction costs, facilitating efficient social control via reciprocation of obligations and expectations, and sustaining a willingness to expend extra effort to improve
student learning. They found that improving Chicago elementary schools were characterized by sharply higher levels of relational trust. They argue that relational trust promotes both professional community and organizational commitment and point out that principals are uniquely positioned to promote relational trust in their schools.

Environment for Students

Safety and order are central throughout the effective schools literature (See for example Brookover et al., 1979; Edmonds 1979a, 1979b, 1981a, 1981b; Glenn, 1981; Rutter et al., 1979). Purkey and Smith (1983) found adequate research evidence to conclude that an atmosphere of order and discipline not only reduces distractions from learning but also tells students that the school is serious about learning. Similar findings are included in a study reporting “essential supports for school improvement” in Chicago (Sebring, Allensworth, Bryk, Easton, & Luppescu, 2006).

Recent reforms and related research supported by the Annenberg and Gates Foundations have centered on reducing the size of high schools as a means of strengthening personal relationships between adults and students (Bill and Melinda Gates Foundation, 2007; Corbett & Hubener, 2007; Quint, 2006). Related work by researchers at Johns Hopkins (McPartland et al., 2006) supports the proposition that smaller units and personalization help keep high school students in school and engaged, even if they are inadequate by themselves to improve learning outcomes. Bryk and Schneider’s findings on the effects of relational trust between teachers and students also lend supporting evidence here (Bryk & Schneider, 2002). Lee and Smith (1999) found that social support contributes modestly to Chicago eighth graders’ achievement, but only if it is accompanied by academic press. Personal as well as academic supports are important during the pivotal 9th grade transition year (Roderick, 2006).

Academic press is “the extent to which … (teachers and students) experience a normative emphasis on academic excellence and conformity to specified academic standards” (McDill, Natriello, and Pallas, 1986 in Lee & Smith, 1999, p. 912). Teachers’ expectations have been shown to influence student learning (Ferguson, 1998; Portes & Rumbaut 2001; Raudenbush, 1984; Rosenthal & Jacobs, 1968; Rosenthal, 1995; Steinberg, Brown, & Dornbusch 1996; Tyson, Darity, & Castellino 2005). High expectations are a key expression of academic press, but the latter is an organizational rather than an individual teacher characteristic. Lee and her colleagues (1993) summarized evidence linking academic press to harder work by students and to higher outcomes, but Lee and Smith (1999) cite worries that if demands substantially exceed student capacities, discouragement and dropout may result. Hoy and Feldman (1999) also stress that the academic goals set for students must be high but also achievable.

In our own recent study of North Carolina high schools, we found that high schools which outperformed expectations or made significant recent improvement showed all three of the characteristics just cited – a safe and orderly environment, strong adult-student relationships, and school-wide expectations for academic learning (Henry, Thompson, et al., 2008).
**Shaping Core Processes**

Instructional processes directly connected with students’ learning exert substantially more impact on student outcomes than do enabling organizational conditions of the sorts outlined above (Elmore, Peterson, & McCarthey, 1996; Hill & Rowe, 1996; Scheerens & Creemers, 1989; Scheerens & Bosker, 1997). Yet Scheerens and Bosker argue that the dominance of proximal variables over more distal organizational conditions does not mean that the influence of leadership is negligible. Most instructionally-related variables are “malleable conditions” as open to shaping by school leaders as are the enabling conditions discussed above. Principals shape instructional processes by **assuring adequate opportunities to learn**, supervising classroom instruction, and using and promoting the use of assessment data.

**Curriculum: Assuring Adequate Opportunities to Learn**

Regardless of what intellectual resources students bring to school or how hard they work at learning, they cannot learn material that they are not exposed to (Sorenson & Hallinan, 1977). So variation in opportunities to learn produces variation in learning, net of students’ ability and effort. Walker and Schaffarzick (1974) found that a purposeful program of core courses benefited all students. Powell, Farrar, and Cohen (1985) showed how curricular demands for many American high school students had been fragmented and diluted through a “shopping mall” approach. They called for a more rigorous academic core for all students. Gamoran et al. (1997) showed that increasing the rigor of high school coursework improves test scores. Porter’s (1998) research concurred and showed that a more rigorous curriculum promotes greater learning without producing dropout among lower performers. Intensive and sustained supplementary instruction in basic skills help low-performers get and stay “on track” (McPartland et al. 2006; Quint, 2006; Roderick, 2006).

Despite definitive statements by advocates for the abolition of tracking, empirical results are mixed and equivocal (Argys, Rees, & Brewer, 1996; Betts & Shkolnik, 2000; Oakes, 2005). Selected North Carolina high schools that are exceeding expected performance with large proportions of academically disadvantaged students are pursuing grouping practices that could clearly be described as tracking, but doing so in a manner that assures low performing students access to the full intended curriculum in smaller chunks, over a longer period, in smaller classes, and with more supports than are provided to higher performers (Thompson et al., 2008). Their curricular practices are consistent with the notion that opportunities to learn are essential for improving student achievement and attainment, but the increased learning opportunities are not produced through de-tracking.

**Instruction: Supervising Classroom Instruction**

During the past two decades, research on instruction has shifted from a focus on general processes of teaching onto subject matter-specific teaching, based in new knowledge about students’ thinking about core concepts and processes from the subject disciplines. The resulting specialization poses a problem for high school principals, and perhaps for middle school principals, as well. Partly for this reason, principals in NC high schools where performance exceeds expectations pursue a two-pronged strategy in supervising classroom instruction
For detailed, subject-specific supervision, they rely on a combination of designated teacher leaders and professional community, while they structure their own classroom observations around findings from the more generic process-product research that preceded the recent focus on “pedagogical content knowledge” (Porter & Brophy, 1988; Shulman, 1986). They focus on such observable features of instruction as clear and explicit goals, a coherent plan, brisk pace, student engagement, time on task, and frequent feedback.

Assessment: Using and Promoting Use of Assessment Data

In an extensive meta-analysis, Black & Wiliam (1998) concluded that formative assessment linked to classroom instruction produces gains “amongst the largest ever reported for educational interventions,” with an average effect size of 0.7 (p. 61). In a similarly broad-ranging review of research on school effectiveness Scheerens and Bosker (1997) found correlations near .50 between learning outcomes and the use of regular feedback and reinforcement in instruction. They argued that a cybernetic orientation (evaluation-feedback-corrective action) implicates all four of the main ingredients of effective schooling: direction (see above), a basis for learning at all levels of the organization, coordination, and the application of incentives. Spurred by the increasing use of assessment for accountability purposes and perhaps by such research, leading schools and districts across the country are learning to use assessment results to improve teaching and learning (Boudett, City, and Murnane, 2005). Principals of NC high schools that are exceeding performance expectations promote use of interim assessments to reshape the enacted curriculum, revise instruction, and intervene with struggling students far more actively than do principals of schools that have been less successful with similarly challenging student populations (Thompson et al., 2008).

In summary, extant literature suggests that principals’ efforts to:

1. set directions for their schools,
2. select, develop, and assign teachers,
3. establish supportive conditions for learning, and
4. shape core academic processes

can indirectly facilitate students’ learning. Schools serving higher achieving students may be able to produce high levels of achievement and attainment without mobilizing and effectively utilizing all available resources for student learning, but schools serving disadvantaged students appear to require especially effective leadership to enable students to beat the odds against academic success.

A comprehensive effort to assess the effects of all four categories of variables above was well beyond the scope of the resources and time available for the present study. We planned to address the effects of teacher quality – reflecting the selection, development, and assignment of teachers -- in a separate component of our evaluation of the DSSF pilot (Henry, Thompson, Fortner, & Zulli, 2009). So we excluded those variables from this study. We also judged that principals’ efforts to establish directions for their schools, while important, were the most remote from the core processes of curriculum, instruction, and assessment which most directly affect what and how much students learn. So we set those aside for future investigation. For the
present study, then, we chose to focus on three sets of supportive conditions – teacher-principal trust, professional community, and organizational commitment – and on principals’ efforts to shape the core processes affecting student learning.

**Data and Methods**

In this section, we describe our sample, data, and analytic approach.

**Samples of Schools and Teachers**

Data for this investigation come from surveys completed during spring 2008 by teachers in schools that contain middle grades (grades 6 – 8) within the DSSF pilot districts as well as a set of matching schools in non-pilot districts. In the DSSF districts, there were 44 schools which had students in grades 6, 7, or 8 but did not include grades 9 or above. We excluded schools with high school grade levels because prior work had shown that expenditures in schools with grades 9 and above were significantly higher than in schools with lower grades only. We planned to control for per pupil expenditures, so including high schools could bias our results. To match the DSSF schools, we selected 42 non-DSSF schools with middle grades where the levels of entering students were similar to those in the DSSF schools one year prior to the implementation of the DSSF pilot. That is, the non-DSSF schools were selected by matching on the 5th grade scores of students entering the school in the year before DSSF began. More specifically, we divided the DSSF schools into groups using deciles based on mean scores of entering students, then chose a set of non-DSSF schools whose mean scores fit into the same decile groups. Matching based on measures of prior student achievement is a reasonable method as the goals of the DSSF pilot center around improving student achievement and our goal, was to explain why DSSF districts were outperforming the other districts.

A total of 86 schools agreed to participate in this investigation where 44 were schools within districts receiving DSSF pilot funds and 42 schools were not receiving DSSF pilot funds. Six of the 86 schools (4 recipients of DSSF funds and 2 non-DSSF schools) failed to return any surveys. Additionally, 15 of the original non-DSSF schools chose not to participate. In response to those refusals, additional schools with similar student performance were selected for the sample until a total of 42 non-DSSF schools agreed to participate. Within all participating schools, a total of 2,869 surveys were sent, and a total of 2,351 fully completed surveys were received for an unadjusted (for incompleteness) response rate of 2,351/2,869 or, 81.94%. Nineteen of the 2,869 were returned partially completed, and were not used in this investigation.

**Data**

As indicated above, in this study we sought to estimate the effects of certain leadership and associated organizational variables upon student performance in North Carolina middle grades and to determine whether these variables account for the positive effects of the DSSF pilot upon student performance. The outcome measure was the performance composite for the school reflecting performance during the 2007-08 school year. This is the measure that is published on school report cards and used to measure overall school performance. The measure is calculated as the percentage of students who achieve proficiency in their end of grade tests in mathematics.
and reading/language arts for a given year. Because school leaders tend to focus on improving the performance composite, it was the measure most likely to be aligned with principals’ improvement strategies and therefore, the most likely to be affected if their strategies were successful.

To measure the four leadership and organizational conditions – organizational commitment, teacher-principal trust, professional community, and shaping core processes – we constructed a questionnaire to elicit teachers’ perceptions of these variables. The questionnaire, the Carolina Dimensions of Schooling Survey, contains a total of 26 items that measured the four variables. All items are Likert-type and include five response options: Disagree Strongly, Disagree, Neither Agree nor Disagree, Agree, and Agree Strongly. Factor analytic methods were used to scale the data, and to create the final four factors. Thus, the concept of school leadership in this report is operationally defined by four variables: Shaping Core Processes measured with 12 items; Professional Community measured with 5 items; Teacher-Principal Trust measured with 5 items; and Organizational Commitment measured with 4 items. The items, grouped by factor, are displayed in Appendix A of this report.

To control for school characteristics other than the leadership-related variables of interest, we used administrative data from the NC Department of Public Instruction on the following variables: (a) ethnic composition of the student body (the percentages of American Indian, Asian, African American, White and Hispanic students within a school), (b) poverty levels (the percentage of students eligible for free lunch and reduced price lunch within a school), (c) school size, and (d) certain teacher characteristics (the percentages of teachers with different levels of experience and types of licenses).

To isolate the effects of leadership on student performance during the 2007-08 academic year from prior performance levels achieved in the schools, we also controlled for each school’s prior year (2006-07) performance composite. Finally, we included indicator variables to distinguish DSSF from non-DSSF schools. All of these school level variables functioned as independent variables in the models.

Analysis

Structural equation modeling was used to test the hypothesis that the four leadership and organizational conditions factors affect student performance in NC middle grades schools, net of controls including prior performance. The standard errors of parameter estimates were calculated to account for the dependence of the observations (i.e., teachers nested within schools) in the data. It was theorized that the latent constructs, Professional Community, Organizational Commitment, and Shaping Core Processes would have direct effects on the observed, dependent variable, the 2007-08 performance composite. Further, it was hypothesized that the latent construct, Organizational Commitment would mediate the effect of teacher Trust on the performance composite variable. Finally, it was assumed that the latent constructs Professional Community and Trust; and Professional Community and Shaping Core Processes were correlated. To test this theoretical model, while including the controls previously described, a structural equation model was estimated to simultaneously assess the effects of both the latent and observed variables on the performance composite.
Findings

As Table 1 indicates, our analysis revealed that the Shaping Core Processes factor exerts a statistically significant and small but substantively meaningful effect on middle schools’ performance composites. A one-point difference in the mean score for Shaping Core Processes is associated with a .054 standard deviation increase in the performance composite in a school – that is, in about 2/3 of a percentage point (.646). In other words, for each one point increase in its mean score on the Shaping Core Processes factor, a school can expect an increase of about 2/3 of a point in its performance composite.

In the model described above, none of the other three leadership-related factors exerted a statistically significant effect on schools’ performance composites. But as reflected in Figure 1 below, two of the factors – Teacher-Principal Trust and Professional Community – may affect schools’ performance composites indirectly through the Shaping Core Processes factor. Teacher-Principal Trust is highly correlated with Shaping Core Processes (.776), and Professional Community is moderately correlated with Shaping Core Processes (.559).

Figure 1: The Effects of Leadership on Middle School Performance

It is not possible to be sure which way the causal arrows actually run in these relationships. That is, we cannot be sure whether the level of trust that teachers accord the principal (Teacher-Principal Trust) influences the extent to which a principal can and does shape curriculum, instruction, and assessment in a school or whether the principal’s efforts to shape those processes somehow inspires trust. To us, it seems more logical to infer that Trust enables the principal to play a more active role in Shaping Core Processes without provoking a backlash from teachers than it does to infer that taking an active role in curriculum, instruction, and assessment somehow increases the extent to which teachers trust the principal. But we cannot rule out the
latter possibility. Nor can we rule out the possibility that some other variable “causes” both Trust and Shaping Core Processes. Indeed, Professional Community is moderately correlated with both Trust (.485) and Shaping Core Processes (.559). So Professional Community may account in part for the correlation between Trust and Shaping Core Processes.

In a similar manner, Professional Community is moderately to strongly correlated with Shaping Core Processes (.559, in the lower part of the range conventionally considered a strong correlation). But we cannot be sure whether Professional Community is influencing Shaping Core Processes, or the other way around. That is, it may be that when principals get actively involved in curriculum, instruction, and assessment, this actually strengthens the extent to which teachers work with each other on these processes. At the very least, our evidence suggests, a principal does not erode or undermine Professional Community by getting actively involved in supervising or coordinating curriculum, instruction, and assessment. This in itself is an important finding. Over the past twenty years or more, strengthening instructional leadership and promoting professional community have often been seen as rival and even mutually opposed approaches to improving school performance. It may be, on the other hand, that Professional Community somehow promotes a stronger principal role in Shaping Core Processes, but to us it seems difficult to imagine a plausible mechanism for this to occur. Finally, paralleling the discussion above, it may be that some other variable or variables, perhaps Teacher-Principal Trust, is influencing both Professional Community and Shaping Core Processes, and that this accounts in part for their correlation.

To our surprise, Organizational Commitment does not appear to affect either a school’s performance composite or even to affect the degree to which principals engage in Shaping Core Processes of curriculum, instruction, and assessment. But both Teacher-Principal Trust (.486) and Professional Community (.231) do appear to affect Organizational Commitment.

For now, perhaps the best way to characterize the relationships among the four leadership variables and a school’s performance composite would be to say that the principal’s role in Shaping Core Processes does exert a small but potentially important effect on school performance, and while the other three factors do not affect the performance composite directly, they constitute a complex of factors that seem to hang together to a significant extent. Schools with higher levels of Teacher-Principal Trust and Professional Community tend to have higher Performance Composites on the one hand and higher levels of Organizational Commitment on the other.

Whether schools in our sample were in DSSF pilot districts did not have a significant impact on their Performance Composites. In the report cited earlier, we found that the DSSF did exert a significant and meaningful effect on students’ test scores, but this relationship does not hold at
Table 1: *Un-Standardized and Standardized Model Coefficients*

<table>
<thead>
<tr>
<th></th>
<th>Un-standardized</th>
<th>S.E.</th>
<th>p-value</th>
<th>Standardized</th>
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<td></td>
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<td>.000</td>
<td>.231</td>
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<td>Trust</td>
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<td>.000</td>
<td>.486</td>
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<td><strong>Performance Composite (07-08)</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Organizational Commitment</td>
<td>.095</td>
<td>.131</td>
<td>.471</td>
<td>.008</td>
</tr>
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<td>Shaping Core Processes</td>
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<td>.214</td>
<td>.003</td>
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<td><strong>OBSERVED CONTROLS - Regression</strong></td>
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<td>Performance Composite (07-08)</td>
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<td>Hispanic</td>
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<td>Asian</td>
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<td>-.001</td>
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<tr>
<td>16 + Years Exp.</td>
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<td></td>
<td></td>
<td></td>
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<td>.015</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>.017</td>
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<td>.776</td>
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<td>.276</td>
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<td>.000</td>
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</table>
the level of our sampled schools’ overall level of performance, as distinguished from the level of individual students’ gains on End of Grade tests in reading and mathematics.

Before turning to the conclusions that we can draw from these findings, we review briefly the effects of our control variables. Not surprisingly, the strongest predictor of a school’s Performance Composite in 2007-08 is its Performance Composite in 2006-07. For each one-point increase in a school’s Performance Composite in 2006-07, its Performance Composite in 2007-08 increased by eight tenths of a point. The percentages of Hispanic and Asian students in a school exerted no discernible effect on its Performance Composite, but the percentages of African American and American Indian students depressed Performance modestly. Perhaps surprisingly, neither of our two measures of the percentage of students in poverty (the % eligible for Free Lunch and the % eligible for Reduced Price Lunch) affected a school’s Performance Composite, controlling for other variables. Neither the percentage of lateral entry teachers nor the percentage of teachers with a continuing license exerted a significant impact on a schools’ Performance Composite, but the percentage of teachers with a temporary, emergency, or provisional license reduced performance by a very substantial margin. Neither the percentage of teachers with different levels of experience nor school size affected a school’s performance significantly.

We should note that our data did not permit us to include certain school level controls which prior research suggests may exert important effects on school performance. These include overall expenditures, expenditures by category (for example, per pupil expenditures for regular classroom instruction and special instruction), and levels of parent education, among other variables. Thus, the findings reported here must be regarded as preliminary, pending further, better-controlled analyses.

Conclusion

The cautions above notwithstanding, the present study does offer some important if provisional findings concerning the impact of leadership and related variables upon a middle school’s overall level of student achievement. First, the degree to which a principal engages in shaping the core instructional processes in a school – the curriculum actually taught, methods of instruction, and the use of assessment to monitor students’ progress and to adjust instruction – does exert a significant impact on student learning in the school. But we hasten to add that this effect is quite small – the equivalent of about 2/3 of a percentage point for a one point increase in teachers’ ratings of the principal’s engagement in these activities. This represents the average difference that the degree of principals’ involvement in shaping core instructional processes made, across the 80 middle schools in our study. As prior research by others has shown, an especially skilled and proactive principal may make a much larger difference in a given initially low-performing school. But to expect that principal leadership will make a large difference across the whole system of public education in North Carolina is probably not realistic. Improvements in principal leadership can help, but to make major improvements on a system-wide basis, policy makers will need to employ a variety of other approaches as well.

That being said, it is important to ensure that leadership development activities focus on how principals can shape the core processes of curriculum, instruction, and assessment. Practices
such as observing teaching and providing constructive feedback for improvement, focusing
attention on students’ scores on formative assessments of their knowledge and skills in order to
re-shape instruction, creating common planning time and encouraging its use to discuss effective
teaching practices as well as identifying individual students who are struggling, and use of
guides to pace comprehensive coverage of the objectives in the North Carolina Standard Course
of Study. It is likely that principals will need to practice recommended techniques, receive
feedback on their own performance, and interact with other trusted principals to become
effective in shaping these core processes.

A second important finding of the present study is that strengthening professional community
and teachers’ trust of their principals do not contribute directly to the improvement of a school’s
overall level of performance but may well build support for a principal to play a stronger role in
instructional leadership, which does contribute to the improvement of school-wide performance.
Thus, building professional community is not at all incompatible with strengthening principals’
instructional leadership – indeed, stronger professional community may well facilitate stronger
instructional leadership.

Yet stronger professional community in the absence of stronger instructional leadership does not
appear to improve school performance. Nor, contrary to research by others (Bryk &Schneider,
2002), does teacher-principal trust by itself seem to contribute directly to improved performance.
Rather, professional community and trust may enable stronger instructional leadership, which
does contribute to better performance, albeit modestly.

Finally, stronger professional community and higher levels of teacher-principal trust do build
stronger teacher commitment to a school and its goals, but surprisingly to us, this increased
commitment does not appear to translate into improved performance, even through the indirect
route of strengthening principals’ instructional leadership.

All this being said, the nexus of organizational commitment, professional community, and trust
do seem to go with a stronger role for principals in instructional leadership, and instructional
leadership does make a modest contribution to the improvement of student achievement levels in
a middle school. Strengthening this complex of leadership-related variables could contribute to
an overall improvement in the performance of North Carolina’s schools, but policy makers
should not count on better leadership alone to assure that all of our students get an equal
opportunity for a sound basic education. For that, a much broader array of policy interventions
will be required.
References


### Appendix A: Factor Loadings of Items on Latent Constructs

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<th>Construct</th>
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<th>Q6C</th>
<th>Q6D</th>
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<td></td>
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<td>1.36</td>
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<td>.00</td>
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<td>.05</td>
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<td></td>
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<td>.81</td>
<td>.81</td>
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<th>Q5C</th>
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<td></td>
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Appendix B: The Carolina Dimensions of Schooling Survey

The Carolina Dimensions of Schooling Survey

Our research team at UNC-Chapel Hill is trying to help state education policymakers develop a better understanding of middle schools across the state. By filling out this questionnaire, you can contribute to this effort.

We will keep your responses completely confidential. We will not report or otherwise use results to describe or evaluate any individual school or person.

Rather, we will use teachers' responses to help us construct an accurate picture of North Carolina middle schools in terms of curriculum, instruction, assessment, and relationships among teachers, between teachers and principals, and between teachers and their schools.

Without such an accurate picture, policy makers cannot make informed decisions. So we ask you to help us inform them, and we thank you for your contribution.

1. Curriculum

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<tr>
<th>Statement</th>
<th>Disagree Strongly</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Agree Strongly</th>
</tr>
</thead>
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<tr>
<td>a. The principal has helped to strengthen teachers' understanding of the Standard Course of Study.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>b. The principal actively encourages teachers to use a pacing guide.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>c. The principal makes sure the curriculum is articulated from grade to grade.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. The principal actively encourages teachers to review curricular materials in light of the Standard Course of Study.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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2. Classroom Instruction

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<th>Disagree</th>
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<th>Agree</th>
<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The principal and/or assistant principals monitor classroom instruction to see that we cover the Standard Course of Study.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>b. The principal and/or APs conduct unscheduled observations in classrooms on a regular basis</td>
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<td>○</td>
<td>○</td>
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<td>c. The principal and/or APs review student work products when evaluating classroom instruction.</td>
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<td>○</td>
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<td>d. The principal and/or APs give teachers useful feedback after observing them.</td>
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<td>○</td>
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3. Student Progress

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<th>Neither Agree nor Disagree</th>
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<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The principal uses tests and other performance measures to assess progress toward school goals.</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>b. The principal meets individually with teachers to discuss student progress.</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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<tr>
<td>c. The principal encourages teachers to use benchmark assessment results to make ongoing changes in instruction.</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>d. The principal encourages teachers to use interim or benchmark assessment results to intervene with individual students.</td>
<td>○</td>
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4. The Teachers I Work With

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<th>Neither Agree nor Disagree</th>
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<tbody>
<tr>
<td>a. The teachers I work with on a regular basis share my beliefs about what our central mission should be.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>b. The teachers I work with on a regular basis coordinate what we teach and/or how we teach it.</td>
<td>○</td>
<td>○</td>
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<tr>
<td>c. The teachers I work with on a regular basis all feel collectively responsible for what and how well students are learning.</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>d. The teachers I work with on a regular basis observe each other teaching.</td>
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<td>e. The teachers I work with on a regular basis get together to discuss our students' learning.</td>
<td>○</td>
<td>○</td>
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<tr>
<td>f. The principal helps us work together as a group.</td>
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5. The Principal

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<th>Neither Agree nor Disagree</th>
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<th>Agree Strongly</th>
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<tbody>
<tr>
<td>a. I really respect my principal as an educator.</td>
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<td>○</td>
<td>○</td>
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<tr>
<td>b. I have confidence in my principal's ability to do the job.</td>
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<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>c. It's OK in this school to discuss feelings, worries, and frustrations with the principal.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>d. I trust the principal at his or her word.</td>
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<td>○</td>
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6. My Relationship to the School

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<th>Neither Agree nor Disagree</th>
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<th>Agree Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. It is my personal responsibility to help this school succeed.</td>
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<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>b. I am willing to go the extra mile to help the school succeed.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>c. Being a member of this school's faculty is an important part of who I am.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>d. Whether my fellow teachers think I do a good job is important to me.</td>
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<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>e. The principal has strengthened my commitment to this school.</td>
<td>○</td>
<td>○</td>
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