Effective Instructional Time Use for School Leaders: Longitudinal Evidence from Observations of Principals

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Scholars have long argued that principals should be *instructional leaders*, but few studies have empirically linked specific instructional leadership behaviors to school performance. This study examines the associations between leadership behaviors and student learning gains using a unique data source: in-person, full-day observations of approximately 100 urban principals collected over three school years. We find that principals' time spent broadly on instructional functions does not predict student learning. Aggregating across leadership behaviors, however, masks that some specific instructional investments predict year-to-year gains. In particular, time spent on teacher coaching and evaluation predicts larger learning gains. In contrast, time spent on informal classroom walkthroughs negatively predicts student growth, particularly in high schools. Additional survey and interview evidence suggests this negative association may arise because principals typically do not use walkthroughs as part of a broader school improvement strategy.

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Recent research documenting the substantial variation in principal effectiveness across schools highlights the importance of identifying the behavioral factors that lead some principals to be more effective than others (Branch, Hanushek, & Rivkin, 2012; Coelli & Green, 2012; Dhuey & Smith, 2012; Grissom, Kalogrides, & Loeb, 2012). Among potential explanations, *instructional leadership* perhaps echoes loudest in educational administration literature. Although definitions vary, instructional leadership generally is defined as the class of leadership functions directly related to supporting classroom teaching and student learning (Murphy, 1988). Across several decades of quantitative studies of instructional leadership, a recent meta-analysis shows positive average effects on student learning, though many of the studies included in the review may not have appropriately controlled for confounding factors (Robinson, Lloyd, & Rowe, 2008).

An obvious challenge for a concept as broad as *leadership functions that support teaching and learning* is distilling what counts as instructional leadership and what does not. Otherwise, practitioners have little guidance for how they might develop or improve instructional leadership within their schools. Studies emphasize different components—most commonly, setting goals, monitoring classrooms, supervising instruction, evaluating progress, coordinating the curriculum, planning professional development, and protecting instructional time (e.g., Hallinger & Murphy, 1985; Hallinger, 2005)—but the thrust of this literature is that strong instructional leaders are "hands-on leaders, engaged with curriculum and instruction issues, unafraid to work directly with teachers, and often present in classrooms" (Horng & Loeb, 2010, 66). This latter idea, that good principals frequently visit classrooms in walkthroughs or informal evaluations, has become a particularly popular identifier of instructional leadership (Eisner, 2002; Protheroe, 2009). Walkthroughs are described as data-gathering vehicles wherein

principals collect information about teaching practice or implementation of school programs to learn what teachers need but not to evaluate them (David, 2007). When used frequently, proponents suggest that short, informal walkthroughs can help build a more positive instructional culture, gauge the school climate, and demonstrate the value they place on instruction (Downey, Steffy, English, Frase, & Poston., 2004; Protheroe, 2009).

Unfortunately, the research base for such claims faces important limitations. Although the literature on instructional leadership is extensive, most studies in this area—like research on principal effectiveness more broadly—focus on small samples or, in the case of larger-scale studies, rely exclusively on surveys (and potential biases introduced by self-reports) to draw inferences about principal behaviors and skills. Moreover, studies linking principals' instructional leadership behaviors to student outcomes using larger samples have rarely utilized longitudinal student-level administrative data capable of appropriately controlling for other predictors of student learning. The few prior studies attempting to link instructional leadership to student outcomes in this kind of rigorous empirical framework have uncovered little evidence of an association (Grissom & Loeb, 2011; May, Huff, & Goldring, 2012). This divergence between prior research advocating the importance of instructional leadership and these more recent findings presents a puzzle that this study seeks to address.

In contrast to nearly all existing studies, this study not only uses longitudinal data on principals and students within a student learning growth framework but leverages a unique alternative source of data on school leadership behaviors: in-person observations. Over three different school years, we sent trained observers into a stratified random sample of approximately 125 schools in Miami-Dade County Public Schools, the nation's fourth-largest school district, to shadow school administrators over full school days and record detailed

information about principal time allocation. Pairing the detailed observational data with rich administrative data provided to us by the district—that includes information about schools, personnel, and students—and with survey data collected from the principals, we investigate principals' investment in instructional leadership behaviors in their schools.

Then, building on time-use studies suggesting that time spent on instruction broadly bears little relationship with improved outcomes (Horng, Klasik, & Loeb, 2010; May, Huff, & Goldring, 2012), we examine how principals in different kinds of schools spend time on specific task areas related to instruction, differentiating, for example, time spent monitoring teachers from time spent on other kinds of instruction-related tasks, such as providing teachers with feedback or developing the educational program at the school. We then test whether different investments in specific instructional leadership activities predict learning growth. In subsequent analyses, we also draw on surveys and interviews conducted among the same set of principals to further illuminate the connections between instructional leadership behaviors and school performance.

Data

Using a similar data collection approach to Horng et al. (2010), we sent trained observers to shadow participating principals in Miami-Dade County Public Schools (M-DCPS) throughout a full school day for one day in the springs of 2008, 2011, and 2012. M-DCPS educates approximately 350,000 students each year, a large majority of whom (62 percent) are Hispanic and eligible for subsidized lunches (75 percent). The observers for this study were armed with a protocol developed by our research team over multiple years of working with time use data. During each observation, a timer alerted the observer to record information about the principal's

activity in five-minute increments, beginning about 30 minutes prior to the official start of school and ending with the afternoon bell. The protocol contained a list of approximately 50 task areas (e.g., student discipline, communicating with parents), plus modes of activity (e.g., face-to-face meeting) and location, which the observer recorded throughout the day.[1]

The sample of observed schools included all M-DCPS high schools plus a random sample of elementary and middle schools. The scale of data collection was deliberately large to allow for explicit modeling of the links between principals' actions and school outcomes. Observing principals longitudinally allows us to track changes in school performance over time, a significant advantage over previous work in this area. In addition, we sent duplicate coders to a subsample of schools to record data on separate protocols using the same timer so we could assess and improve the reliability of the data collection. The reliability was approximately 90 percent.

We link observations to rich administrative data on personnel and students provided to us by M-DCPS. Personnel files include information about staff characteristics and employment in each year. Student files include student characteristics and performance information on standardized tests, which we use to create test score growth measures over time. We also supplemented the observational and administrative data with interviews and web-based principal surveys. For this study, we use interview responses from all observed principals from the 2011 data collection and the data from survey questions of principals in 2008 and 2011, where we asked questions directly addressing classroom observations. We gave surveys to all 314 M-DCPS principals in regular public schools in spring 2008 and 306 principals in 2011 and obtained an average response rate of 89%.

[1] The 2011 and 2012 contained a slightly longer list of task items than in 2008 to capture additional specificity.

Methods

The goal of this study is to answer the following three research questions. First, we ask what proportion of principals' overall time is spent on instructional activities overall and on each of five different types of instructional activities. In particular, we investigate the following activities: (1) coaching teachers to improve their instructional practice; (2) developing the school's educational program; (3) evaluating teachers or curriculum; (4) informal classroom walk-throughs to observe practice; and (5) planning or participating in teachers' professional development. Second, we ask whether variation in specific instructional activities is associated with differences in school characteristics. Finally, we ask whether variation in specific instructional activities predict either schools' value-added performance or increases in schools' value-added performance over time.

The first two research questions are descriptive. For the first question we simply report statistics describing the time spent on instruction overall and on each task. For the second question we describe differences in the characteristics of schools in which principals spend more or less time on instructional tasks and we test the differences with simple *t*-tests.

The final question requires more rigor. Although we do not have the ability to identify a convincingly causal effect of principal time use on school effectiveness, we aim to provide initial evidence on whether there is likely to be a causal relationship. To this end, we want to compare observably similar schools, reducing the possibility that the observed relationship is driven by factors that affected both school quality and principal behavior. Our first set of analyses is based on the following equation:

$$A_{igsy} = \beta_0 + A_{igs,y-1}\beta_1 + A^{other}_{itgs,y-1}\beta_2 + X_{igsy}\beta_3 + C_{gsy}\beta_4 + S_{sy}\beta_5 + P_{sy}\beta_{5y} + \pi_g + \theta_y + \varepsilon_{igsy} \quad (1)$$

Here, the test performance of student *i* in grade *g* in school *s* in year *y* is modeled as a function of that student's test performance in the prior year both in the same subject (e.g., math or reading) and in the other subject as well as student characteristics *X*, classroom characteristics *C*, and school characteristics *S*. The student characteristics we include are: gender, race, age, free or reduced price lunch (FRPL) status, special education (SPED) status, limited English proficiency (LEP) status, and prior-year absences and out-of-school suspensions. The classroom characteristics are the class averages of student demographic characteristics, reading and math scores, and behavioral outcomes from the prior year, plus the standard deviation of the class's scores. The school characteristics are: total student enrollment, the proportion of student racial groups and FRPL students in the school, and indicators for school level (elementary, middle, or high). Also included in Equation 1 are grade and year fixed effects to take out any systematic differences in learning across years and grades. Finally, Equation 1 includes our measure of interest, *P*, which is principal time use on instructional activities. The equation essentially models whether students who we would predict would have similar achievement gains given their own characteristics, their classrooms characteristics, and schools' characteristics actually learn more in schools where principals spend more time on instruction. The model is run at the student level with standard errors clustered at the school level.

Equation 1 allows us to ask whether students learn more in schools where we observe principals spending more time on instruction. However, one aim of instructional leadership is to improve school effectiveness so that schools get better over time and students learn more today than they did in the past or more in the future than they do today. Students in a fourth grade classroom in one year are not the same as students in that same classroom in another year, so it is difficult to determine how much the current students would have learned in prior years had their

principal been spending more or less time on instruction. Our approach is to create an estimate of each school's effectiveness in the same subject in each of the past two years and to add these measures to the model presented in Equation 1. We take that approach here, using two prior years' school-by-year effectiveness gains with empirical Bayes shrinkage techniques as described in Grissom, Kalogrides, and Loeb (2012) to reduce measurement error in the school gains. Thus, this second analysis asks whether students learn more when their principal spends more time on instruction relative to how much they likely would have learned one or two years earlier.

Finally, given our findings from the analyses above, we use principal survey data, interview data, and additional, supplemental observational records that provide more detailed information on time use when principals are engaged in instructional tasks. Specifically, we first leverage survey data from 2008 that investigated principals' perspectives about their classroom walkthrough activities. In particular, we examine whether principals identified their classroom walkthroughs as interactions that were seen as opportunities for professional development. We use this data to sharpen our identification of classroom walkthroughs as either more or less related to teacher development. We also explore interview data from a subset of principals regarding their rationale for engaging in classroom walkthroughs. Finally, we investigate the specific content and tone of interactions that observers coded as supplemental information when they identified teacher coaching activity to better understand the work that principals were engaged in. Descriptive analysis from this data helps us to better understand the patterns that emerge with respect to instructional coaching.

Results

Principals' Instructional Time Use

Our analyses begin with a description of how much time principals spend on instructional activities during the school day. Table 1 describes the distribution of principals' instructional time use overall and across specific categories of instructional activity. Overall, principals spend an average of 12.6 percent of their time on instruction-related activities. Within this area, brief classroom walkthroughs are the most common activity, accounting for 5.4 percent of principals' time use. Formally evaluating teachers or their curriculum accounts for 2.4 percent of principals' time. Principals spend 0.4 percent of their time informally coaching teachers to improve their instruction, and 1.4 percent of their time developing the educational program at their school. Observed principal activity related to professional development planning or execution varies widely across school years and types but averages 0.6 percent of time use. Some of the variation in professional development time use stems from a small subset of school principals who were observed spending more than 15 percent of their time in these activities. Nine other instructional time use categories total to 2.3 percent of principals' time.

Variation in principals' overall instructional time use is associated with several school characteristics. Table 2 describes a variety of school characteristics for principals with above or below average instructional time use, both overall and in each specific area of interest. Overall, principals who spend above average amounts of time on instructional activities are more likely to lead schools with lower achievement levels, more black students, and more free or reduced price lunch students. Moreover, elementary school principals spend a greater portion of their time on instructional activities, while high school principals spend less.

Associations between school characteristics and instructional time use vary substantially as a function of the specific instructional activity in question. For example, there are no

significant differences in the characteristics of schools by the percent of time principals spend coaching teachers or developing the school's educational program. However, there are some substantial differences as a function of the proportion of time spent evaluating teachers and the curriculum. In particular, principals in lower-achieving schools and in schools with a higher proportion of free or reduced price lunch students and black students spend more time on evaluation. Differences in the characteristics of schools related to principals' time spent on classroom walkthroughs are smaller and less significant, though principals do fewer walkthroughs in high schools and in larger schools. Finally, principals in lower achieving schools, and in elementary schools, spend more time on professional development than principals in other schools.

Instructional Time Use and School Performance

The primary goal of this study is to examine the extent to which overall and specific instructional time use predicts student learning and increases in school's value added to student learning over time. Table 3 provides these results for our full sample of schools across all three school years in math and in reading. The first panel of Table 3 shows that overall instructional time use is not associated with any difference in student learning or school improvement. This result is in keeping with earlier results finding no evidence of a relationship between school outcomes and time spent on instructional tasks (Horng, et. al, 2010).

However, distinguishing among instructional tasks makes the potential benefits of principals' instructional time more evident. Some specific instructional categories are associated with significant differences in school performance, at least in math. In particular, more time spent coaching teachers predicts greater student math learning and increases in math value-added

performance. For example, for an additional percent of principal time spent coaching (i.e., coaching increased by .01), math achievement increases by about 1 percent of a standard deviation. Time spent evaluating teachers and curriculum also predicts somewhat higher school value-added performance in math, as well as increases in school value-added performance. In contrast, time spent on classroom walkthroughs, the most common instructional activity, has a directionally negative association with school value-added performance and increases in school value-added performance. These mixed results help to explain the lack of any effect of instructional time use overall.

We further investigate the association between instructional time use and school performance by examining effect sizes across school types. Table 4 details the association between specific time categories and school value-added in high schools and elementary/middle schools separately. Directionally, we see that classroom walkthroughs are associated with the most negative performance outcomes in high schools. The significant negative association here may be due to the diversity of subjects taught in high schools and the resulting lack of alignment between principals' areas of instructional expertise and instructional practices in the classrooms they observe. The associations between school math performance measures and teacher coaching, developing the educational program, and evaluating teachers and curriculum are similar in magnitude across school types.

Finally, we examine the extent to which the observed associations between instructional activities and school performance were consistent across school years, and include these results in supplemental Tables S1 for math and S2 for reading. We find that both the positive association between coaching and school math performance and the negative association between classroom walkthroughs and school performance are fairly consistent. For example, a

one percent increase in classroom walkthrough time use is associated with a 0.12 percent of a standard deviation decrease in student math value added achievement gains in 2007-08, a 0.24 percent decrease in 2010-11, and a 0.27 percent of a standard deviation decrease in student math value added achievement gains in 2011-12.

In contrast with the consistent effects of coaching and walkthroughs, associations between evaluation activities and achievement gains increase over the period of the study, with more positive effect sizes in each subsequent year of the study. This increase in the association between evaluation activities and school performance over time may be the results of recent reforms instituted by MDCPS in the area of teacher evaluation, including implementation of the Instructional Performance Evaluation and Growth System to more closely monitor teacher performance.

Further Exploration

The most consistent findings in the above analyses are that while overall time on instruction is not associated with student learning or school improvement, both classroom walkthroughs and time coaching teachers are. Surprisingly, time on classroom walkthroughs in negatively associated with these school outcomes. In this section, we bring additional data to bear on understanding these effects.

Classroom Walkthroughs

Classroom walkthroughs may serve multiple purposes. As an example, we asked principals in the 2011 survey where they learned about the effectiveness of their teachers. These results are detailed in supplemental Figure S1. What we see is that classroom walkthroughs

appear to be an important source of information for principals, with 62% of principals identifying them as their primary source of information about teacher effectiveness. However, some principals likely make better use of their time spent in classroom walkthroughs than other principals do. For instance, in 2008 we asked principals whether their teachers see classroom walkthroughs as an opportunity for professional development. As shown in Figure S2, we find that while some principals do utilize walkthroughs for teacher improvement, an approximately equal number do not.

We make use of the principal reports of their use of classroom observations in our final multivariate analysis. These data are available for the 39 schools in school year 2007-08 whose principals were both observed and who completed the survey. Again, roughly half of these principals reported that their classroom observations are usually or always viewed by their teachers as opportunities for professional development, while the other half of principals reported that teachers sometimes, rarely, or never viewed observations as opportunities for professional development. We examine, in Table 5, the interaction between observed principal classroom walkthroughs and principals' self-reports that their observations are not seen as opportunities for professional development. While the sample size is small and not all of the estimates are significant, the general trend is evident: time on classroom observations is more negatively associated with student learning when not used for professional development.

Coaching

While we have less information on coaching from the surveys, we also investigate additional detailed information about principal time use in this area using the supplemental observational data. These data, which recorded the content of coaching interactions, are detailed

in supplemental Table S3. While a variety of content areas are addressed, the most frequent topic of discussion related to how the teacher could improve his or her teaching (27.3 percent). Other common content areas include how to support students academically (19.8 percent), discussion of curriculum areas (15.7 percent), and classroom management (14.0 percent). In total, close to half (46.6 percent) of coaching interactions involved at least one of these four areas. The more positive effect of coaching relative to professional development could be due to a greater focus on instructional content in many of these interactions.

In keeping with the analysis of classroom observations above, we use the survey to ask whether coaching is more effective when the principals do use walkthroughs for the purpose of professional development. The idea behind this approach is that our measure of time use is inherently noisy because we are observing principals on a single day each year and categorize their observed behaviors based on imperfect information. By combining these measures we may be better able to identify principals who work with teachers on instruction. Table 5 shows these results as well. We see that coaching is particularly effective when principals also report that teachers view their walkthroughs as opportunities for professional development.[2]

Interviews about Classroom Walkthroughs

Finally, we conducted interviews with principals following observations in 2011 that included questions about their approach to instructional leadership. Though not specifically prompted to discuss walkthroughs, 39 brought them up as part of their instructional leadership strategies, and among those, 33 mentioned a rationale for using walkthroughs that we could code from their responses. Supplemental Table S4 shows a representative sample of their responses.

[2] While we present the model with the interactions with both coaching and walkthroughs, the results are similar when the interactions are entered in separate models.

The most common reasons given for conducting walkthroughs reflect a focus on monitoring teacher practices in order to gather information and be more visible to staff. For example, one principal described walkthroughs as a way to "recognize in a very brief walk-in into the classroom that that curriculum is actually being adhered to in some form or fashion and that the students and teacher are on task." Another principal described the rationale in the following way: “I really need to be visible throughout my building throughout the day and so I really make it a point and an effort to be in those classrooms at least twice during the day and visit and see what’s going on with the instruction.”

In contrast, a smaller subset of the principals we interviewed cited the opportunity to provide coaching or other support to teachers as a rationale for walkthroughs. For example, one principal described the purpose of walkthroughs as “in case I need to provide input or if I see a teacher that’s on the wrong page per se. I know that I can always redirect that individual.” Another described their approach as “I am able to go into any classroom in this building and teach that lesson, diagnose what’s wrong with that lesson, and then be able to tell the teacher, you really need to do this.”

Overall, the differences in principals’ reported rationales for conducting walkthroughs provides some suggestive evidence for why we find that walkthroughs are negatively associated with outcomes in some schools, but not others. While most principals appear to conduct walkthroughs primarily for reasons of information gathering and visibility, others view walkthroughs as an opportunity to provide instructional support to staff. These differences may reflect not only a diversity of opinions about leadership priorities, but also differences in principals’ capacity to engage with teachers to improve their instructional execution.

Discussion and Conclusions

Given the significant time constraints under which principals operate, critical examination of the how they can best use their time to promote school success is essential. Our goal in this study has been to assess the relationship between principals' time spent on instructional tasks and school effectiveness as measured by student learning and improvement over time in schools' value added to student learning. We find no relationship between overall time spent on instructional activities and either school effectiveness or school improvement. When we decompose instruction into its element tasks, however, a more nuanced story emerges that has potentially important implications for school leadership practice.

Time spent directly coaching teachers is positively associated with learning and school improvement, while time spent engaged in informal classroom observations or "walkthroughs" is negatively associated with learning and school improvement, at least in high schools. For a subset of schools we also had survey data indicating whether the walkthroughs were viewed by teachers as professional development. In schools where walkthroughs are not viewed as professional development, walkthroughs are particularly negative; while in schools where they are viewed as professional development, coaching is particularly positive. Thus, principals who execute instructional leadership differently do get different outcomes. Yet investments of principal time in instructional activities do not have monolithic effects but rather are likely conditional on the type and quality of instructional leadership work.

While we find a negative association between time spent on walkthroughs and outcomes, these results do not imply that walkthroughs cannot be useful. Our survey results provide evidence that walkthroughs are principals' primary source of information about teachers' effectiveness. However, if they do not use these walkthroughs to support professional

development or other human resource practices, the information they gather is unlikely to be beneficial. This intuition is supported both by our findings and by prior research indicating that walkthroughs that do not feature some component of feedback to teachers may be less effective (Blase & Blase, 1999; Downey et al., 2004). Moreover, walkthroughs are a substantial part (almost half) of all the time principals spend on instruction. Schools are likely better served if principals spend more time using the information for school improvement than collecting it.

Still, these results are exploratory. There are a number of reasons that they might misrepresent the true causal effect of time allocation. First, the time use and survey measures that we use may indicate that the allocation of principal instructional time use matters, but it is also possible that these measures are proxies for the skills and behaviors that different principals bring to the table when trying to support teachers instructionally. It may be these differences in skills and not the time use that actually causes the school outcomes we observe. Furthermore, it is possible that we have a reverse causation problem. Better schools may allow principals the time to work with teachers, while in less effective schools they are more constrained to spend more time observing classrooms. Rather than isolating a causal effect, we interpret our results as providing justification for further analysis that focuses on time use within these instructional areas.

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TABLE 1

Observed Percentage of Principal Instructional Time Use, Overall and in Specific Categories, by School Type and School Year

		2008			2011			2012		
	Total	High School	Middle School	Elem. School	High School	Middle School	Elem. School	High School	Middle School	Elem. School
Total Instructional Time Use	12.6	11.7	17.0	16.4	9.8	13.9	14.1	10.2	11.0	16.5
	(10.3)	(10.6)	(8.7)	(13.9)	(9.4)	(9.5)	(9.0)	(10.2)	(9.2)	(11.8)
Coaching Teachers	0.4	0.8	0.8	0.7	0.2	0.7	0.8	0.1	0.4	0.1
	(1.2)	(1.4)	(1.2)	(1.3)	(0.7)	(2.0)	(1.8)	(0.5)	(1.2)	(0.3)
Developing the Educational Program	1.4	0.5	2.1	0.6	1.2	0.7	0.9	2.7	1.1	2.6
	(4.3)	(1.3)	(4.6)	(0.8)	(2.2)	(1.6)	(1.7)	(7.7)	(3.2)	(6.3)
Evaluating Teachers or Curriculum	2.4	1.5	1.6	3.8	2.3	3.0	3.0	1.2	2.8	3.7
	(4.9)	(3.1)	(3.4)	(7.5)	(4.8)	(5.9)	(5.5)	(3.3)	(5.1)	(6.0)
Classroom Walkthroughs	5.4	5.2	5.9	6.3	4.3	6.7	6.6	4.0	4.7	7.0
	(6.4)	(8.4)	(4.4)	(7.9)	(5.6)	(5.4)	(6.1)	(6.1)	(4.8)	(7.2)
Required or Non-required Teacher PD	0.6	0.9	3.7	2.0	0.1	0.2	0.7	0.1	0.3	0.3
	(1.9)	(2.2)	(6.4)	(2.2)	(0.3)	(0.9)	(1.8)	(0.4)	(1.0)	(0.7)
Other Instructional Time Use	2.3	2.9	2.8	2.9	1.8	2.6	2.1	2.0	1.7	3.0
	(3.7)	(4.5)	(5.6)	(4.0)	(3.6)	(3.1)	(2.4)	(4.3)	(2.8)	(3.6)
N of Schools	127	37	11	12	43	28	28	44	32	29

Note: PD = Professional Development

TABLE 2

Descriptive School Characteristics and T-tests as a Function of Principals' Instructional Time Use, Overall and in a Several Specific Categories

	Total Instructional Time Use			Coaching Teachers			Developing the Educational Program		
	Low	High	p-value	Low	High	p-value	Low	High	p-value
% Time Spent	7.8	21.8		0.0	1.8		0.0	4.2	
School Characteristics									
School Enrollment	788	558	0.003**	659	796	0.108	729	607	0.151
% FRPL	66.6	76.5	0.010*	71.9	66.9	0.248	69.8	72.5	0.533
% Black	27.9	42.9	0.013*	33.6	34.7	0.866	35.5	29.6	0.379
% Hispanic	59.2	48.4	0.049*	55.7	52.5	0.598	52.9	60.0	0.243
% High School	46.7	23.5	0.008**	38.2	35.3	0.768	36.4	40.0	0.710
% Middle School	27.0	29.4	0.765	27.4	29.4	0.826	29.9	22.9	0.432
% Elem. School	26.3	47.1	0.016*	34.4	35.3	0.927	33.7	37.1	0.718
Prior math achievement	0.041	-0.141	0.016*	-0.042	-0.005	0.667	-0.021	-0.062	0.621
Prior reading achievement	0.037	-0.139	0.026*	-0.042	-0.009	0.708	-0.02	-0.069	0.572
N of Schools	76	51		93	34		92	35	
	Evaluating Teachers or Curriculum			Classroom Walkthroughs			Required or Non-required Teacher PD		
	Low	High	p-value	Low	High	p-value	Low	High	p-value
% Time Spent	0.5	7.8		2.2	11.3		0.0	2.1	
School Characteristics									
School Enrollment	728	615	0.175	785	566	0.004**	710	650	0.491
% FRPL	66.7	79.9	0.001**	68.1	74.1	0.123	68.6	76.5	0.070~
% Black	29.5	44.5	0.023*	30.3	39.1	0.146	30.7	43.3	0.067~
% Hispanic	57.6	48.0	0.107	57.7	50.7	0.198	56.7	49.2	0.231
% High School	40.6	29.7	0.253	44.7	26.9	0.042*	41.6	25.0	0.094
% Middle School	28.3	27.0	0.882	27.3	28.8	0.853	27.9	28.1	0.980
% Elem. School	31.1	43.2	0.195	28	44.2	0.059~	30.5	46.9	0.094~
Prior math achievement	0.046	-0.223	0.001***	-0.004	-0.073	0.368	0.011	-0.159	0.047*
Prior reading achievement	0.045	-0.224	0.001**	0.000	-0.082	0.300	0.013	-0.17	0.041*
N of Schools	90	37		75	52		95	32	

*Note: PD = Professional Development. Prior achievement and value added represented as standardized z scores. Low and high correspond to above and below mean time use by category. ~p<.1, *p < .05, **p < .01, ***p < .001.*

TABLE 3

School Principal's Overall and Specific Instructional Time Use and School Value Added or Increases in Value Added

	Math Value Added	Increasing Math Value Added	Reading Value Added	Increasing Reading Value Added
Overall Instructional Time Use	0.073	0.097	-0.019	-0.003
	(0.063)	(0.066)	(0.034)	(0.034)
Coaching Teachers	1.057*	0.947**	0.052	0.040
	(0.419)	(0.376)	(0.245)	(0.282)
Developing the Educational Program	0.349	0.405	-0.013	0.013
	(0.241)	(0.253)	(0.085)	(0.082)
Evaluating Teachers & Curriculum	0.245**	0.286**	0.025	0.054
	(0.085)	(0.089)	(0.054)	(0.047)
Classroom Walkthroughs	-0.154	-0.121	-0.092	-0.069
	(0.126)	(0.110)	(0.062)	(0.067)
Required and Non-required PD	-0.040	-0.055	0.018	0.038
	(0.121)	(0.123)	(0.112)	(0.122)
Other Instructional Time	-0.064	-0.034	0.035	0.017
	(0.132)	(0.122)	(0.068)	(0.065)
Year Fixed Effect	X	X	X	X
School, Classroom, and Student Characteristics	X	X	X	X
Prior Value Added Controls		X		X
N of Schools	127	125	127	127

*Note: PD = Professional Development. Standard errors clustered at the school level. Controls include students' prior achievement, FRPL (free or reduced price lunch) status, gender, race, age, SPED status, LEP status, prior suspensions and attendance; classroom averages of race, gender, achievement, FRPL and LEP characteristics; school averages of enrollment, FRPL, and racial characteristics; and school type. ~p<.1, *p < .05, **p < .01, ***p < .001.*

TABLE 4

School Principals' Overall and Specific Instructional Time Use and School Value Added or Increases in Value Added, by School Type

	Math				Reading			
	High School		Elementary and Middle School		High School		Elementary and Middle School	
	School Value Added	Increasing School Value Added	School Value Added	Increasing School Value Added	School Value Added	Increasing School Value Added	School Value Added	Increasing School Value Added
Coaching Teachers	1.081~	1.205*	1.079~	0.689	0.571	0.885*	-0.160	-0.327
	(0.605)	(0.576)	(0.575)	(0.498)	(0.421)	(0.413)	(0.288)	(0.327)
Developing the Educational Program	0.532	0.198	0.426	0.564*	-0.058	-0.025	0.079	0.127
	(0.387)	(0.471)	(0.279)	(0.266)	(0.062)	(0.069)	(0.175)	(0.164)
Evaluating Teachers & Curriculum	0.251**	0.260**	0.302**	0.322**	-0.156~	-0.087	0.160~	0.141~
	(0.081)	(0.077)	(0.112)	(0.116)	(0.087)	(0.076)	(0.091)	(0.074)
Classroom Walkthroughs	-0.293*	-0.267*	-0.089	-0.088	-0.168*	-0.180*	-0.058	-0.017
	(0.114)	(0.101)	(0.176)	(0.144)	(0.079)	(0.080)	(0.086)	(0.083)
Required and Non-required PD	-0.016	0.065	-0.027	-0.096	-0.272	-0.127	0.119	0.080
	(0.222)	(0.206)	(0.131)	(0.117)	(0.265)	(0.341)	(0.149)	(0.142)
Other Instructional Time	-0.154	-0.109	0.106	0.169	0.076	0.069	0.039	-0.051
	(0.109)	(0.130)	(0.227)	(0.206)	(0.073)	(0.066)	(0.135)	(0.128)
Year Fixed Effect	X	X	X	X	X	X	X	X
School, Classroom, and Student Characteristics	X	X	X	X	X	X	X	X
Prior Value Added Controls		X		X		X		X
N of Schools	48	46	80	80	48	48	80	80

*Note: PD = Professional Development. Standard errors clustered at the school level. Controls include students' prior achievement, FRPL (free or reduced price lunch) status, gender, race, age, SPED status, LEP status, prior suspensions and attendance; classroom averages of race, gender, achievement, FRPL and LEP characteristics; school averages of enrollment, FRPL, and racial characteristics; and school type (elementary versus middle school). ~p<.1, *p < .05, **p < .01, ***p < .001.*

TABLE 5

School Principal's Observed Time Use and Perspectives of Whether Observations are PD Opportunities, and School Value Added or Increases in Value Added

	Baseline Model				With Survey-Observation Interactions			
	Math Value Added	Increasing Math Value Added	Reading Value Added	Increasing Reading Value Added	Math Value Added	Increasing Math Value Added	Reading Value Added	Increasing Reading Value Added
Coaching Teachers	0.226	0.347	0.120	-0.123	-0.275	-0.382	0.428	-0.072
	(0.511)	(0.595)	(0.498)	(0.364)	(0.474)	(0.564)	(0.413)	(0.343)
Developing the Educational Program	0.521*	0.510*	0.360	0.449**	0.334	0.168	0.285	0.308*
	(0.216)	(0.206)	(0.230)	(0.137)	(0.214)	(0.165)	(0.198)	(0.141)
Evaluating Teachers & Curriculum	-0.061	0.010	0.187	0.438*	-0.023	-0.051	0.206	0.391*
	(0.168)	(0.235)	(0.229)	(0.166)	(0.198)	(0.233)	(0.264)	(0.177)
Classroom Walkthroughs	-0.254	-0.280	-0.147	-0.211~	-0.200	-0.237	0.087	-0.027
	(0.194)	(0.207)	(0.146)	(0.116)	(0.186)	(0.195)	(0.225)	(0.204)
Required and Non-required PD	-0.197	-0.200	-0.172	-0.031	-0.285*	-0.317**	-0.331**	-0.171
	(0.157)	(0.161)	(0.123)	(0.106)	(0.113)	(0.093)	(0.106)	(0.108)
Other Instructional Time	-0.064	-0.068	-0.078	-0.039	-0.114	-0.105	-0.159*	-0.090)
	(0.170)	(0.176)	(0.081)	(0.052)	(0.151)	(0.142)	(0.077)	(0.057)
Principal-reported: Teachers less often see walkthroughs as a PD opportunity					0.016	0.020	0.006	0.012
					(0.019	(0.020)	(0.021)	(0.020)
Walkthroughs x less often seen as PD					-0.197	-0.320	-0.699*	-0.612*
					(0.242)	(0.278)	(0.276)	(0.265)
Coaching x more often seen as PD					5.509***	6.231***	2.042	2.225~
					(1.159)	(1.002)	(1.394)	(1.220)
School, Classroom, and Student Characteristics	X	X	X	X	X	X	X	X
Prior Value Added Controls		X		X		X		X
N of Schools	39	38	39	38	39	38	39	38

*Note: PD = Professional Development. Data from a sample of schools in school year 2007-08 where both observation and principal survey data were available. Standard errors clustered at the school level. Controls include students' prior achievement, FRPL (free or reduced price lunch) status, gender, race, age, SPED status, LEP status, prior suspensions and attendance; classroom averages of race, gender, achievement, FRPL and LEP characteristics; school averages of enrollment, FRPL, and racial characteristics; and school type. ~p<.1, *p < .05, **p < .01, ***p < .001.*

Supplemental Appendix

Figure S1. *Principals' Information Sources for Understanding Teacher Effectiveness, School Year 2010-11*

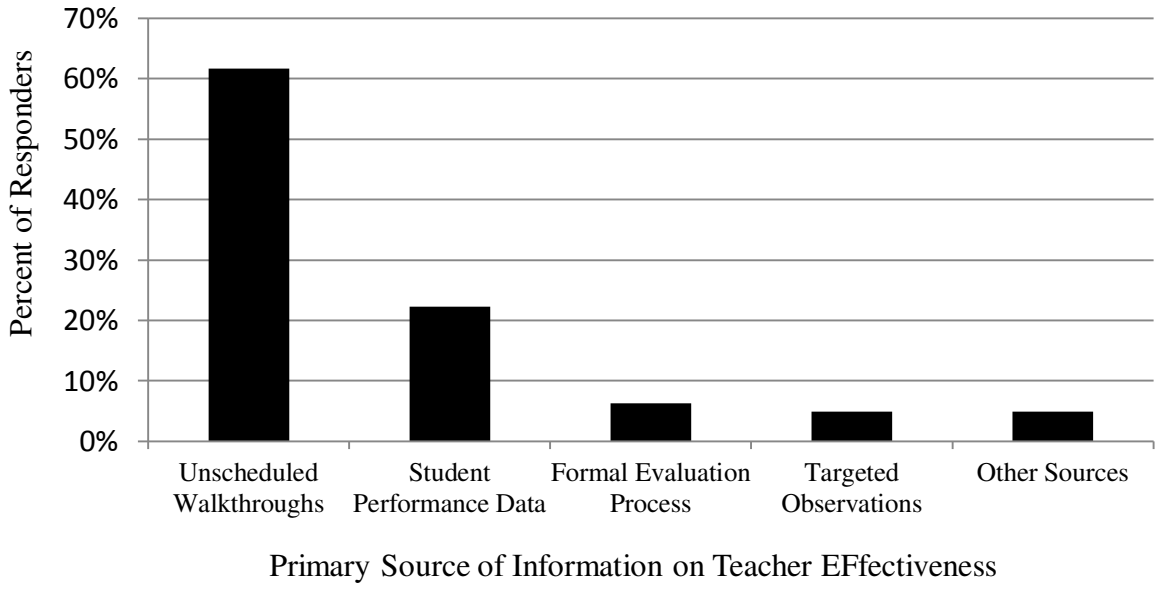

Figure S2. *Principal Reports of the Professional Development Associated with Classroom Observations, School Year 2007-08*

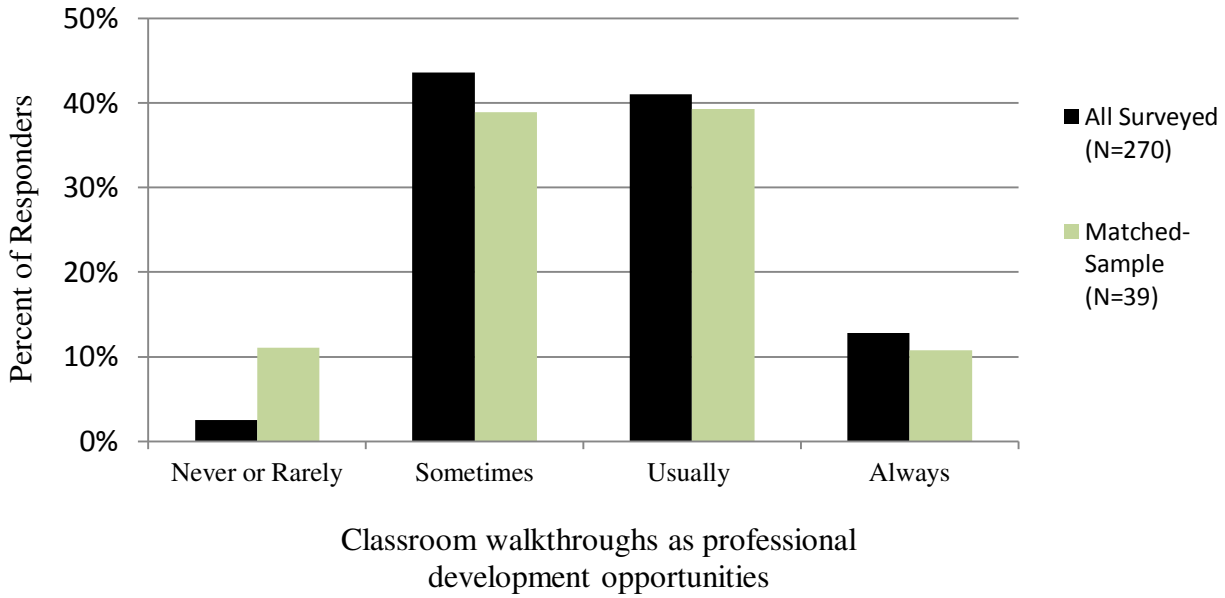

TABLE S1

School Principal's Overall and Specific Instructional Time Use and School Math Value Added or Increases in Value Added, by School Year

	Math					
	School Year 2007-2008		School Year 2010-2011		School Year 2011-2012	
	School Value Added	Increasing School Value Added	School Value Added	Increasing School Value Added	School Value Added	Increasing School Value Added
Coaching Teachers	0.890	0.970~	1.140*	0.914	n/a	
	(0.606)	(0.554)	(0.549)	(0.622)		
Developing the Educational Program	0.291	0.364~	0.360	0.116	0.338	0.745
	(0.192)	(0.190)	(0.346)	(0.390)	(0.404)	(0.457)
Evaluating Teachers & Curriculum	-0.002	0.053	0.190~	0.196~	0.687*	0.802**
	(0.126)	(0.119)	(0.099)	(0.109)	(0.329)	(0.281)
Classroom Walkthroughs	-0.122	-0.184	-0.243~	-0.174	-0.273	-0.361
	(0.150)	(0.135)	(0.145)	(0.137)	(0.254)	(0.238)
Required and Non-required PD	-0.294*	-0.245~	n/a		n/a	
	(0.141)	(0.137)				
Other Instructional Time	-0.114	-0.081	0.266	0.208	-0.600	-0.412
	(0.144)	(0.145)	(0.184)	(0.174)	(0.534)	(0.482)
School, Classroom, and Student Characteristics	X	X	X	X	X	X
Prior Value Added Controls		X		X		X
N of Schools	60	59	94	91	69	68

*Note: PD = Professional Development. Standard errors clustered at the school level. Controls include students' prior achievement, FRPL (free or reduced price lunch) status, gender, race, age, SPED status, LEP status, prior suspensions and attendance; classroom averages of race, gender, achievement, FRPL and LEP characteristics; school averages of enrollment, FRPL, and racial characteristics; and school type. Results not shown for cells with limited sample (defined as activities consituting less than one half of 1 percent of principals' total time use). Note that in SY 2011-12 the district did not assess math at the high school level. ~p<.1, *p < .05, **p < .01, ***p < .001.*

TABLE S2

School Principal's Overall and Specific Instructional Time Use and School Reading Value Added or Increases in Value Added, by School Year

	Reading					
	School Year 2007-2008		School Year 2010-2011		School Year 2011-2012	
	School Value Added	Increasing School Value Added	School Value Added	Increasing School Value Added	School Value Added	Increasing School Value Added
Coaching Teachers	0.355	0.381	-0.172	-0.164	n/a	
	(0.496)	(0.439)	(0.536)	(0.612)		
Developing the Educational Program	0.472*	0.534**	-0.333	-0.277	-0.038	0.024
	(0.210)	(0.171)	(0.282)	(0.308)	(0.069)	(0.079)
Evaluating Teachers & Curriculum	0.010	0.052	-0.038	0.000	0.171	0.211*
	(0.140)	(0.146)	(0.067)	(0.066)	(0.125)	(0.101)
Classroom Walkthroughs	0.070	-0.020	-0.119	-0.060	-0.207**	-0.184*
	(0.122)	(0.114)	(0.115)	(0.128)	(0.077)	(0.075)
Required and Non-required PD	-0.125	-0.048	n/a		n/a	
	(0.088)	(0.093)				
Other Instructional Time	-0.004	-0.023	0.153	0.114	0.105	0.052
	(0.079)	(0.066)	(0.173)	(0.152)	(0.145)	(0.119)
School, Classroom, and Student Characteristics	X	X	X	X	X	X
Prior Value Added Controls		X		X		X
N of Schools	60	59	94	91	104	103

*Note: PD = Professional Development. Standard errors clustered at the school level. Controls include students' prior achievement, FRPL (free or reduced price lunch) status, gender, race, age, SPED status, LEP status, prior suspensions and attendance; classroom averages of race, gender, achievement, FRPL and LEP characteristics; school averages of enrollment, FRPL, and racial characteristics; and school type. Results not shown for cells with limited samples (defined as activities constituting less than one half of 1 percent of principals' total time use). ~p<.1, *p < .05, **p < .01, ***p < .001.*

TABLE S3

Type, Tone, and Content of Principals' Interactions when Coaching Teachers

	Type of Interaction	Content of Interaction
Scheduled meeting	51.5%	
Unscheduled meeting	40.0%	
Casual discussion	4.3%	
Other or unspecified	4.2%	
Discussing how the teacher can improve his or her teaching		27.3%
Supporting students in general academically		19.8%
Curriculum issues		15.7%
Classroom management		14.0%
Discussing other teachers		12.4%
Individual's well-being		8.3%
Supporting a specific student academically		5.8%
Arranging PD for the individual		5.8%
Compliance with district policy/regulations		5.8%
Discussing something that the principal observed		5.8%
Managing a specific student's behavior		5.0%
Student assessment results		5.0%
Mediation / conflict management		5.0%
Working conditions		5.0%
Compliance with school policy/regulations		4.1%
Casual/social talk		3.3%
Supporting specific students socio-emotionally		3.3%
Other content (five other areas observed)		4.1%
N of individual coaching interactions coded		121

Note: Additional data shown collected in 2011 and 2012 school years. Specific tone and content indicators are not mutually exclusive within a single interaction. Content areas observed in less than <3% of interactions are grouped into the single category of "Other content."

TABLE S4

Categorization of responses and representative quotes from interviews of principals regarding their rationale for classroom walkthroughs

Reason for Walkthroughs	**N**	**Examples**
Visibility and Monitoring	22	"recognize in a very brief walk-in into the classroom that that curriculum is actually being adhered to in some form or fashion and that the students and teacher are on task"
		"seeing what the teachers are doing, being in touch with what's happening in the classrooms"
		"I really need to be visible throughout my building throughout the day and so I really make it a point and an effort to be in those classrooms at least twice during the day and visit and see what's going on with the instruction that goes on between the teacher."
		"incredibly important in being the instructional leader is being visible, visiting the classes. How else do you really know what's going on?"
		"making sure that the curriculum is up to par, that is, it meets the expectations of what the faculty, the children, and the parents expect it to be, it's always at a high standard, and make sure that it's followed through."
		"I can tell when something's going right in a classroom and when things aren't going right in a classroom. When we have a school-wide focus on a particular...strategy or something, we want to see that strategy going on in classrooms"
Coaching/Providing feedback about instruction/Connecting to resources	11	"I spend a lot of time in the classroom...and learning myself what's going on in the classroom as far as good instructional practices, at the same time providing feedback to the teachers on what, good practices, they are implementing them and recognizing them and commending them on that and also having them reflect on areas of improvement"
		"I am able to go into any classroom in this building and teach that lesson, diagnose what's wrong with that lesson, and then be able to tell the teacher, you really need to do this"
		"I know because I walk on a daily basis, more or less where they're at, how can I provide assistance if we need to provide additional resources"
		"It's not just looking at the teacher, but being able to look at the students and know whether they're getting it or not. And if not to be able to talk to the teacher or plan any kind of professional development or intervention"
		"In case I need to provide input or if I see a teacher that's on the wrong page per se. I know that I can always redirect that individual"