

Variations in the Amount of Coaching in Literacy Collaborative Schools

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Introduction

Many major urban districts today including New York, Boston, Chicago, Los Angeles, and San Diego as well as entire states like Florida have committed large investments to school-based professional development anchored in the work of literacy coaches. These decision-makers believe that instructional coaches are a potential lever for producing change in schools, yet evidence of the efficacy of such an approach is limited. This paper is part of a larger research project which seeks to examine a comprehensive early literacy professional development model, the Literacy Collaborative, which hinges on the introduction of literacy coaches into schools. This larger investigation is organized around a four-year research design to collect multiple sources of data from 18 public elementary schools across the eastern United States. In this paper, we seek to examine variation in the extent to which participants engage in the professional development activities specified by the Literacy Collaborative model, so that we may better understand what facilitates and hinders these change efforts. We begin by providing additional information about the Literacy Collaborative, the overall study, and the research questions at hand.

Background on the Literacy Collaborative

Literacy Collaborative (LC) is one of the largest literacy coaching initiatives in the United States and has been used in over 700 elementary schools in 200 districts across 26 states. Established in 1993, the LC program is designed to improve elementary children's reading, writing, and language skills. The LC model is grounded in the reading theories of Marie Clay (1979; 2004) and Fountas and Pinnell (1996; 2001; 2006), and focuses on developing teachers' ability to strategically employ a combination of reading, writing, and

word study.¹ Because Literacy Collaborative instruction targets all the components of reading, including both phonics and comprehension, the program is considered to provide comprehensive literacy instruction. The teacher's role in the LC model is to engage students at all ability levels in reading and writing processes with explicit instruction and guidance.

The cornerstone of the LC program is long-term teacher professional development by an on-site coach. The program posits that the key to teacher development is the creation of multiple opportunities for teachers to reflect on their own teaching and to talk about their observations of children with a "more expert" other (i.e., the coach). To ensure that coaches are prepared to carry out effectively the LC program of activities, coaches are trained over the course of a school year while still teaching in their schools. The LC professional development for coaches promotes a thorough understanding of literacy theory and content and enhances coaches' own expertise in implementing the comprehensive literacy instructional practices model. In addition, Literacy Collaborative coaches learn during the training year how best to support other teachers as they engage the program's instructional model and improve their classroom practices over time. After the training year, the literacy coaches continue to teach classes of students at least half-time and assume full responsibility for providing a range of school-based professional development opportunities, including whole-school workshops, study groups, and one-on-one coaching. In order to accomplish shifts in teacher practice, the literacy coach also

¹ The underlying principals of Literacy Collaborative instruction are that learning occurs through interaction with teachers and peers, with oral language development providing a foundation for literacy development; reading and writing should be taught together; children need access to high-quality books written at their independent reading level and those written at a slightly higher, instructional level at which they can read with teacher support; children need authentic literacy experiences to develop as readers and writers; and children require direct and embedded instruction in phonics and phonological awareness, vocabulary and word structure, fluent reading, and literal and inferential comprehension strategies (Fountas & Pinnell, 2006; National Institute of Health and Development, 2001; Pinnell & Fountas, 1998; Pinnell & Founts, 2003).

works to create a community of adult learners within each school, which will fundamentally change how teachers collaborate as professionals.

LC coaches primarily interact with teachers in two kinds of activities—workshops and one-on-one coaching. Researchers have acknowledged that while workshops can provide a common knowledge base and a shared perspective among teachers in a school, workshops alone afford little guidance as to what to do about a particular problem of practice emerging in an individual teacher’s classroom (see Kohler, Crilley, Shearer, and Good 1997). In order to address this need, the LC model relies on coaches working one-on-one in their teachers’ classrooms observing, modeling, and catalyzing teachers’ development toward more expert practice. As such, the one-on-one coaching sessions are viewed as the high leverage activity in the LC model.

Background on the Larger Study

In order for LC coaches to influence student achievement, a set of causal connections must be forged that we herein refer to as a “causal cascade.” First, a school-based coach must establish new work routines and relationships organized around the professional development practices established by LC. Second, teachers must regularly participate in these LC professional development activities. Third, this participation must result in desired changes in teachers’ classroom practice. Finally, assuming these desired changes in instruction occur, the Literacy Collaborative posits that this will ultimately culminate in improvements in student learning. Each of these casual connections is under investigation as part of the larger project.

This research is occurring in 18 schools across 8 states in the Midwest, the South, and the eastern part of the U.S . During the first year of the study, 2004-05, coaches

received training in their new role but did not offer any literacy professional development activities in their respective schools. Thus, the first year was a baseline or “no treatment” period and serves as the comparison point in an accelerated multi-cohort longitudinal value-added design (Biancarosa, Bryk and Dexter, 2008). In the second, third and fourth years, the literacy coaches offered school-based professional development for all kindergarten, first and second-grade teachers.² To date, approximately 285 teachers have participated in LC workshops and coaching sessions across the 18 study schools.

Purpose of the Paper

This paper reports on preliminary findings based on data from the first three years of this four year study. (Final reports from this study, based on all four years of data, will be forthcoming in 2009.) We consider one specific aspect of the causal cascade described above. Specifically, we examine the extent to which coaches successfully engage teachers in one-on-one coaching. We ask: How much coaching is actually taking place in the 18 schools we studied? Does the amount of coaching receive by individual teachers vary within and between schools? And if so, what might account for this?

An Activity Theory Framework for Guiding Inquiry

In general, activity theory can be used for analyzing the introduction and take up of many different kinds of innovations in schooling. We draw in this project on basic framing elements from this theory to conceptualize the introduction of LC practices into classrooms through the new role of a school-based literacy coach.

² The Literacy Collaborative has three, grade-specific programs: primary (for grades K to 2), intermediate (grades 3 to 5/6), and middle school (5/6 to 8th grade). However, this study focuses only on the primary grade (K-2) program.

Background on Activity Theory

Activity theory seeks to illumine everyday human action. Whether performed alone or in the company or others, activity theory argues that all human activity is fundamentally social and is shaped by the tools and sign systems that are the product of social and cultural processes. These artifacts shape individuals' intentions as they carry out their work through the possibilities that they enable and constrain and the assumptions they embody.

Seminal contributions to activity theory are generally attributed to the Russian historical-cultural psychologist Leont'ev (1974). (See also Leont'ev 1978; 1981; and 1989). In applying these ideas to the present project, we have drawn heavily elaborations of this theory by Engestrom (1987), Cole and Engestrom (1993), and Engestrom (1999). We also integrate within this general framework several key observations from the ecological change theory applied by Zhao and Frank (2002); and insights about the role of informal school social networks in the processes of innovation diffusion from Frank, Zhao and Borman (2004).

Activity Theory and Studying the Efficacy of the LC Initiative

The activity theory framework that has guided our inquiry into the efficacy of LC links the problem of changing individual teacher practice with an organizational focus on innovation diffusion. Specifically, the framework draws attention to three core considerations in the LC Initiative:

- A direct focus on the intentional activity being undertaken by coaches and teachers to improve teaching and ultimately student learning;
- A recognition of the different knowledge, skills and dispositions that individual teachers and coaches may bring to their work and the consequences that this individual agency may have on how the LC instructional innovation is taken up locally and used (or not); and
- An understanding of how adult activity in schools (meaning here both the base state of activity prior to the intervention and any intentional efforts to change

this base state) is shaped by key normative and structural aspects in the organization of schools.

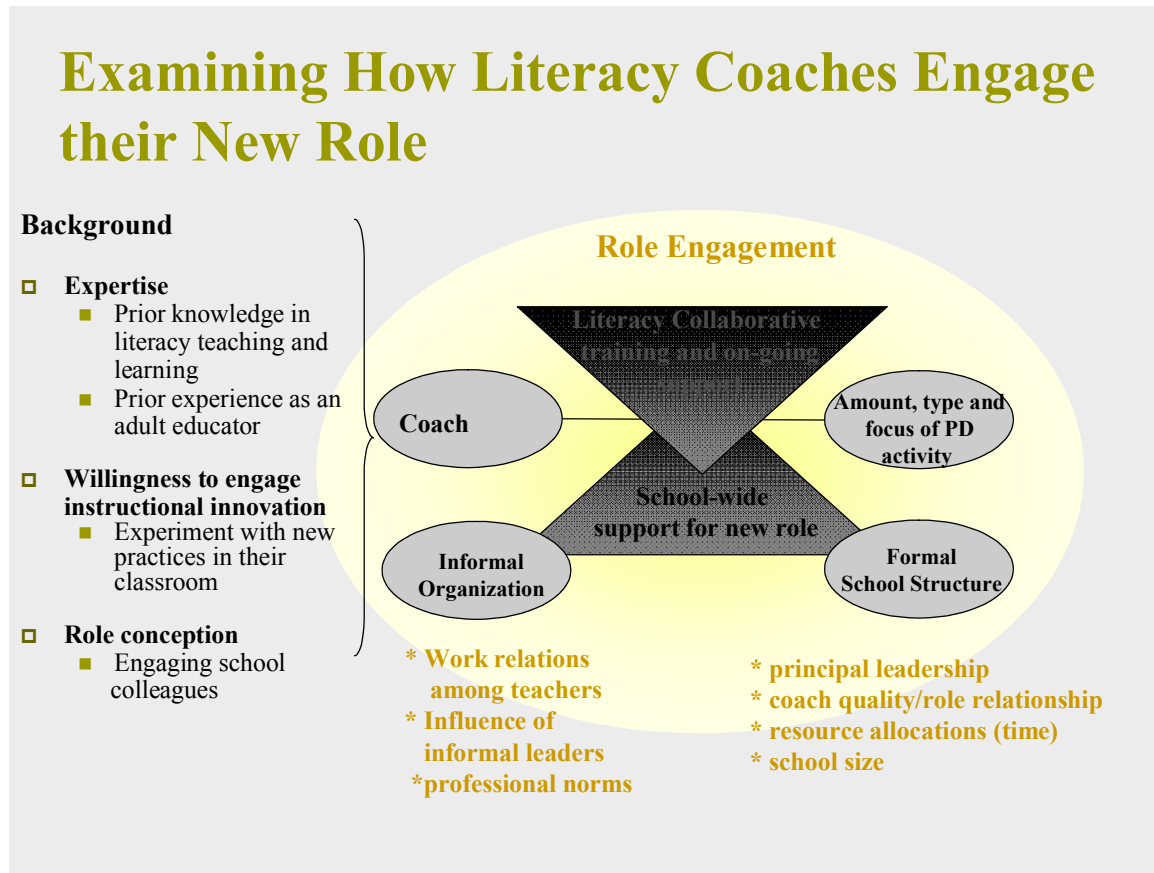
Taken together, these considerations form an organized complexity (Simon, 1996) that we posit influences the efficacy—and sources of variation in efficacy—of the LC program.

A focus on work activity. The framework directs attention to the specific work activity embedded in individual roles within a school. In the case of literacy coaches, their work focuses on the design and conduct of school-based professional development aiming to improving teachers' instructional practices within a comprehensive literacy framework. This coach activity may play out in whole teacher group professional development sessions, in supporting smaller study groups of teachers examining some particular aspect of practices or in direct coaching with an individual teacher.

Correspondingly, the work activities of teachers in comprehensive literacy are organized around six basic instructional components that form the instructional framework (Pinnell and Fountas 2006). Discerning how best to use the pedagogic resources afforded here is key to advancing student learning. For many teachers, the LC program represents a profound intervention into their work. It seeks to change the basic materials, procedures, and social routines of instruction and even more fundamental, it poses a challenge to basic normative conceptions about how a teacher thinks about her work and relations to colleagues.

Individual agency of literacy coaches. The framework draws attention to the fact that each individual bring her own ensemble of beliefs, role conceptions, and expertise to their work. Figure 1 illustrates this in the context of the new role of a school-based literacy coach seeking to advance implementation of a comprehensive literacy framework in their school.

Figure 1.



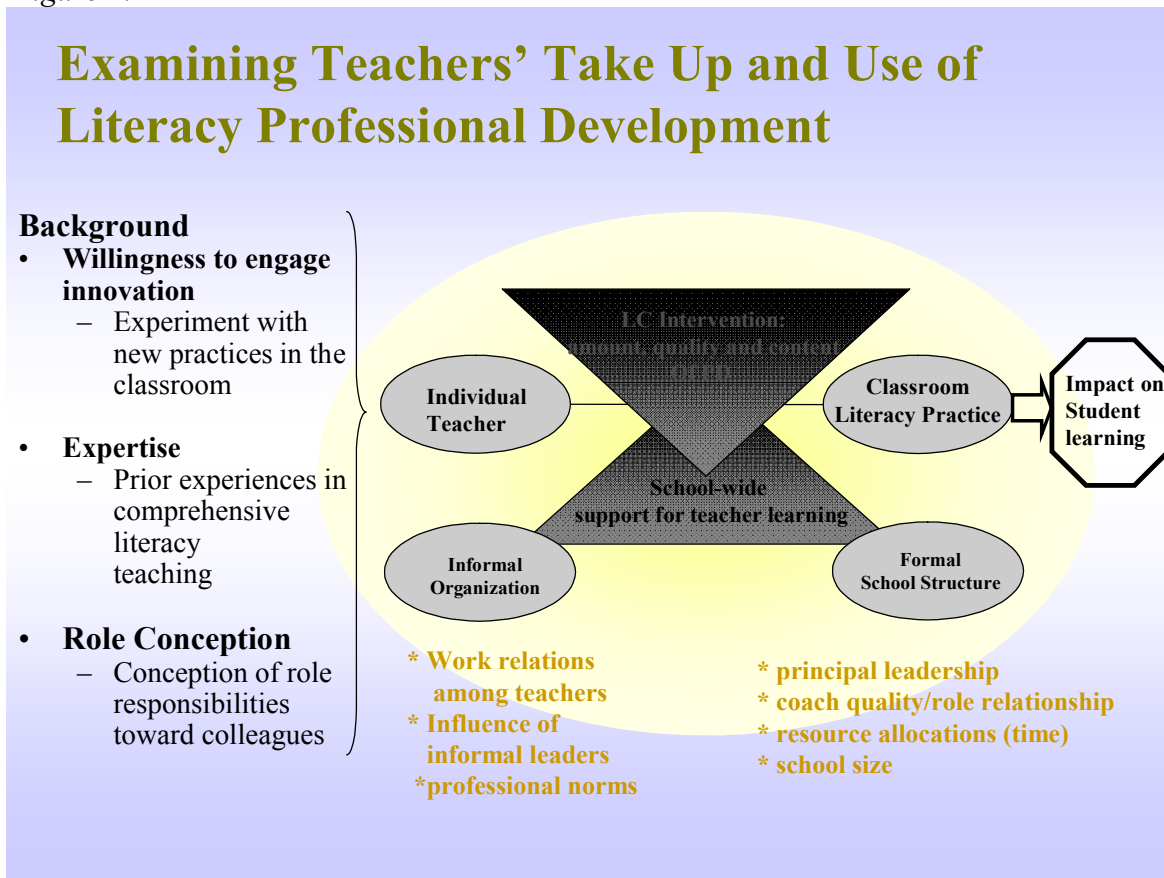
We hypothesize that the nature of the enactment of the literacy coach role depends on three key background characteristics of the individuals who attempt to take on this role. First is the base *expertise* that a novice literacy coach brings to this activity from their prior training and professional experience. The work of LC coaching makes demands both on expertise in teaching children within a comprehensive literacy framework as well as on facility in working with other adults on improving their practice. While the LC coach training program focuses deliberately on building coach knowledge and skills in both domains, nonetheless it seems reasonable to expect that novice coaches with prior

expertise in comprehensive literacy instruction and experience in the role of an adult educator will more readily engage the coaching role envisioned by the LC.

Second, the tasks involved in school-based coaching, as well as some aspects of the comprehensive literacy instructional framework itself, may be an entirely new undertaking for the individuals involved. Extensive prior research (c.f. Rogers 2003) documents significant differences among individuals in their general *orientation toward innovation* (e.g. being an early versus a late adopter) and these basic differences in individual pre-dispositions to innovate may have effects on LC implementation as well.

Third, coaching entails a new form of *role relationship with colleagues* where coaches actively seek to engage peers in the improvement of their practice. This task represents a fundamental challenge to traditional norms of egalitarianism where colleagues may help one another but only when that help is specifically requested (Lortie 1975). Thus, we hypothesize that individual coaches will vary in their pre-disposition to take on such a “counter-cultural” role vis-à-vis school colleagues, and this may strongly influence the nature and degree of role enactment.

Figure 2.



Individual teacher agency in the take up and use of LC professional development.

We hypothesize that a similar set of individual background factors shape teacher engagement as well. (See Figure 2.) Teachers' *orientation toward innovation*—their willingness to try new practices and to be guided by an improvement orientation—is likely to shape how they participate in LC professional development and whether they attempt new practices in their classrooms.

Similarly, a teacher's *prior experience with comprehensive literacy* may come into play as well. The actual mechanics affecting individual participation, however, may be highly nuanced in this regard. Specifically, following on basic ideas developed in Cole and Engstrom and consistent with observations from Coburn's (2004) study of changes in

teachers' literacy practices, we hypothesize that a zone of proximal development operates here. A coach's professional development objectives must seem both ambitious while also attainable by teachers. Undoubtedly, variability in individual teacher discernments is likely to occur here. For some teachers the new instructional practices may appear too may foreign, and as a result be simply be rejected out of hand. In contrast, other teachers may already have considerable prior experience in comprehensive literacy instruction, and a novice coach may have little capacity to add value here and may choose to focus her attention elsewhere. In both of these scenarios, we would expect to observe little program engagement and few changes in instructional practice. On the other hand, a relative novice teacher with aspirations for ambitious classroom practice may be maximally disposed to engage the services of school-based coach. Under these circumstances, substantial instructional change seems likely.

Third, just as for coaches, teachers' *conception of their role responsibilities toward their colleagues* are likely to influence their response to LC activities. Successful one-on-one coaching requires, to some extent, that teachers overcome traditional working norms in which teachers tend to work in isolation, rarely expecting their colleagues to enter their classrooms and offer suggestions for improvement. Thus, we hypothesize that teachers will vary in their own tendencies to actively help others and seek out help in return, and this pre-disposition to actively engage in the social relations of instructional improvement may predict whether they will take strongly to the LC initiative.

The influence of school organizational context. Finally, the individual agency for both coaches and teachers, as discussed above, may operate quite differently depending on the particularities of school context.

i). The exercise of formal leadership. Key in this regard is school leadership priorities and how these align with introducing the LC initiative. For example, it seems reasonable to expect that the LC program will be more actively engaged in schools where the principal is strongly supportive. This support may manifest itself in variety of instrumental ways, such as principals allocating discretionary resources for the program, creating extra time for the professional development activities to occur, and nurturing a “safe zone” for teachers’ experimentation with these new practices in their classrooms.³ At a more symbolic level, supportive principals may also use the myriad of formal and informal interactions that they have with teachers to express support and encourage participation.⁴

ii). Base social control mechanisms over teachers’ work. Schools also have established mechanisms that shape the social organization of instruction. These mechanisms can vary from loose coupling to the much tighter controls of bureaucracy or professional community (Rowan 1990). In the loosely coupled school, individual teachers typically work in isolated classrooms and exercise considerable individual discretion in defining and carrying out the tasks of instruction (Bidwell 1965; Weick 1976; Meyer and Rowan 1978). In the bureaucratic school, in contrast, administrators monitor teachers to ensure that they implement prescribed curricula in prescribed ways (Fuhrman et al. 1988). Still different, in professional communities, teachers work together to improve instruction

³ For an excellent conceptual and empirical account on these points in the context of technology use in schools see Yong Zhao & Kenneth A. Frank, “Factors Affecting Tech Use in Schools,” *American Educational Research Journal* 40, no. 4 (Winter 2003).

⁴ For a detailed account of school context effects on efforts to improve reading instruction, see Cynthia E. Coburn, “Beyond Decoupling: Rethinking the Relationship Between the Institutional Environment and the Classroom,” *Sociology of Education* 77, no. 3 (July 2004) 211- 244.

by relying on a combination of shared goals for student learning, expertise and social interconnectedness (Lewis and Kruse 1995; McLaughlin and Talbert 2001).

Each control mechanism is typically associated with a set of underlying beliefs about instruction. In the case of loose coupling, instruction is seen as highly variable, impossible to specify, and dependent on particular teachers—i.e., idiosyncratic. In the case of bureaucratic control, instruction is viewed as routine, specifiable, and dependent on inputs, outputs and monitoring teachers' work. In the case of professional community, instruction is understood as a complex practice contingent on local and moment-to-moment conditions and as a result dependent on collaborative problem-solving among teachers and continuous learning by a faculty (Elmore and Burney 1997).

Not surprisingly, some base social control mechanisms are more conducive than others to a professional development initiative of the type attempted by the LC. Specifically, the instruction at the heart of the LC envisions teachers as problem-solvers with access to knowledge that can support them in their work. It relies on a network of human relationships that not only develop professional knowledge, but also make it possible for peers to agree on core principles and hold each other accountable to common standards of practice. Thus, we posit that a base state of professional community is the more likely to nurture the development and take up of the complex teaching practice that undergirds LC instruction. (Louis, Kruse, and Bryk 1995; Newmann et al. 1996).

iii). Relational trust across the informal social organization. While teachers in the United States work in the privacy of their own classrooms most of the day, they nonetheless remain dependent upon colleagues to achieve success in their teaching endeavors. (See Bryk and Schneider 2003.) This social dependence and the valence that it

creates is another base state resource and/or constraint for engaging the LC program in a given school community. Specifically, a higher base level of existing trust among faculty and with their principal, as well as emerging trust with their new literacy coach, should facilitate teachers' program engagement.

iv) Organizational norms. Norms shape how individuals think about and enact their roles and responsibilities within an organization. At the heart of the LC initiative is a conception of improving teaching as a problem in expertise development (Bryk et al. 2008). In principle, such expertise legitimates the role of a coach, but this is only the case when expertise is publicly acknowledged and valued within that school community. Of key concern in this regard is the prevailing norm of egalitarianism typically found in the loosely-coupled school. Under this norm, status tends to be accorded based on seniority and loyalty to superiors rather than expertise per se (Lortie 1975).

Not surprisingly, the formally developed expertise in the new role of the literacy coach may not fare well in the loosely-coupled school as it conflicts with this egalitarian norm. Specifically, the LC initiative marks the coach as some one of different status from other teachers based on acquired expertise. However, a deeply entrenched base state of egalitarianism might well counter LC efforts in this regard.

Along related lines, in the loosely coupled school, teachers place high value on autonomous action in their classrooms and expect engagement in professional development and new instructional practices to be voluntary. The LC initiative, in contrast, seeks to create school-wide collective action within a common instructional system that is supported by mutual accountability. This stands at odds with a prevailing norm of autonomy.

In sum, a variety of structural and normative organizational features undergird the base state of school operations. We hypothesize that each element represents a potentially critical consideration in both the role enactment of literacy coaches as well as how (or if) teachers respond to the professional development opportunities that coaches in turn create. The work of a novice coach should be facilitated in a school with positive pre-existing work relations. In contrast in schools where the base state of leadership and professional community are weak, coaches may encounter significant barriers to entering teachers' classrooms and engaging in the deeply personal work of one-on-one coaching.

Data and Measurement

As noted earlier, no LC professional development for other teachers took place during the first year of the study. The research design took advantage of this “no treatment” year as an opportunity to collect baseline survey data about teachers, coaches, and schools *before* the LC model was introduced (see section below for further elaboration on the kind of information collected). LC implementation began in the fall of year two. Starting in the second semester of year two, each literacy coach began to keep a record of their actual professional development activities. Coaches used an online web site to record each workshop given, the topics addressed, and the list of participating teachers. Similarly, each one-on-one coaching session with an individual teacher was documented and included a report on how much time was spent in each of these sessions. These records were regularly monitored by the research team to ensure continuous and reliable recording of the coaches' activities. As the study concluded this past spring, follow-up surveys were

administered to teachers and coaches in order to capture their views about any individual- and school-level changes that may have taken place over the last three years.

The data used in this report come from the first three years of the LC field trial (fall 2004 through spring 2007). The data from the final year of the study, 2007-2008, will become available for analysis later this year and the findings will be reported in 2009.

Individual Teacher and Coach Background Characteristics

As mentioned above, teachers were surveyed prior to program implementation on each of the major factors described in the conceptual framework. These include aspects of the individuals' professional background, such as educational attainment, prior formal literacy training, and extent of teaching experience (in general and specific to the school). The surveys also included items designed to capture each teachers' orientation toward innovation in their classrooms, their base instructional literacy practices and personal views about teachers' work. Each coach responded to a similar set of items. In addition, we inquired about their prior experiences in leading professional development activities and working with adults, orientations toward their new role as a coach, and perceived support for the LC initiative in the school.

School Context Measures

We also administered a separate survey to all K-3 staff which asked them to report on various aspects of their school's organizational context. (A complete description of these school level measures can be found at the Information Infrastructure System Project website.)⁵ Since these data were collected prior to any program implementation, they provide a picture of the pre-existing conditions that each coach confronted as she sought to engage in the deeply personal work of one-on-one coaching. Together, the individual- and

⁵ http://www.iisrd.org/program_inquiry/instruments_measures.shtml

school-level survey data allow us to contextualize our LC “treatment exposure” data (described next) in terms of differences that individual teachers might bring to this activity and the school context in which all of this occurs.

Finally, we also collected basic demographic characteristics each year on each study school. This included information on racial/ethnic composition, percent eligible for free/reduced lunch programs, percent designated as special education, and percent designated as English language learners, as well as school size (in particular, the number of kindergarten to second grade teachers since those are the grade levels targeted by the LC model) and a measure of staff stability.

The Core Outcome Variables: Professional Development Exposure and School Coverage

The online professional development logs mentioned earlier provide information on the nature and extent of coaching that took place in each school. These data were used to create measures of individual teacher exposure to professional development, including counts of the number of school-based workshops they attended, and the frequency, activity type, and length of individual coaching sessions received each semester. These same data, when aggregated together at the school level, also afford a measure of the degree of coaching role enactment at each school.

For purposes of the analyses presented in this paper, we have defined a teacher as *active* in professional development if he or she participates in at least two LC activities in a semester (either one-on-one coaching and/ or attendance at one of the coach’s LC workshops). To create a measure of “coaching coverage” in each school, we tabulated the number of K-2 teachers who participated in at least two LC activities in each semester and

then divided by the number of K-2 teachers who were present and eligible for LC professional development in that semester. The degree of coverage within each school does vary across semesters.

Currently we have data available for analysis from four semesters of activity, beginning with the second semester of year 2, by which time all LC coaches had initiated their school-based role. (Recall that year 1 was a training year for coaches, and a baseline data collection year for the study. The earliest school-based professional development began mid-fall of year 2). The maximum number of semesters that any individual teacher was actually eligible for coaching depends on when he or she entered or left the school, as well as the grade level he or she taught each year. Regarding the latter, recall that the larger project, of which this report is a part, is examining the efficacy of the K-2 LC program. Therefore, if a teacher switched, for example, into a third grade classroom during one year of the study, she was not considered “eligible for coaching” in that year.

Analyses and Results

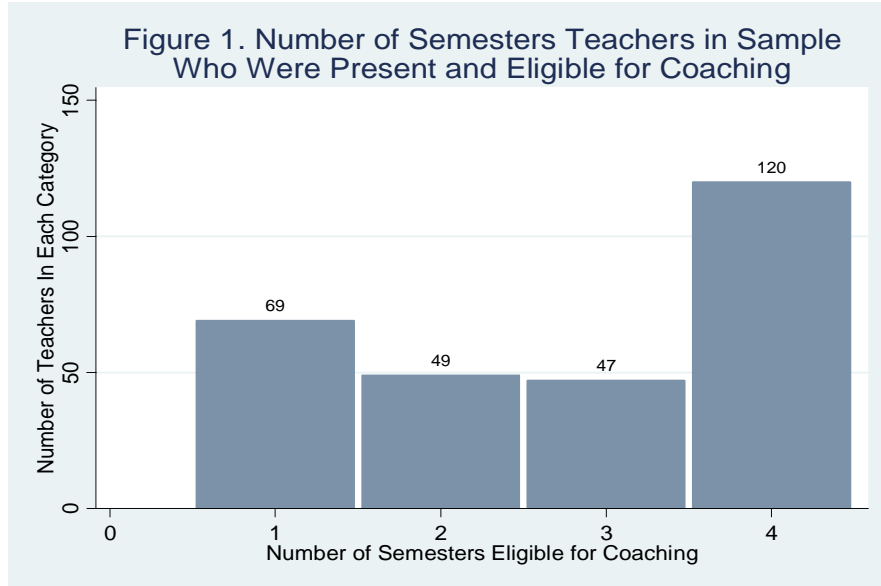
According to the Literacy Collaborative, one-on-one coaching in the classroom constitutes the high leverage professional development activity within their program. Thus, we have chosen to focus on the number of coaching sessions teachers received as a key intermediate outcome to be examined in this paper.⁶ As context for these analyses, we first describe below the patterns in coaching coverage occurring each semester in each school as well the duration of these activities. We then proceed to examine possible factors related to variations in the amount of coaching received by different teachers. These analyses are

⁶ As we will see, there is variation in the length of individual coaching sessions, and thus another possible outcome of interest would be the number of *hours* of one-on-one coaching a teacher received. This alternative outcome variable will be considered when the final, fourth year data are available for analysis.

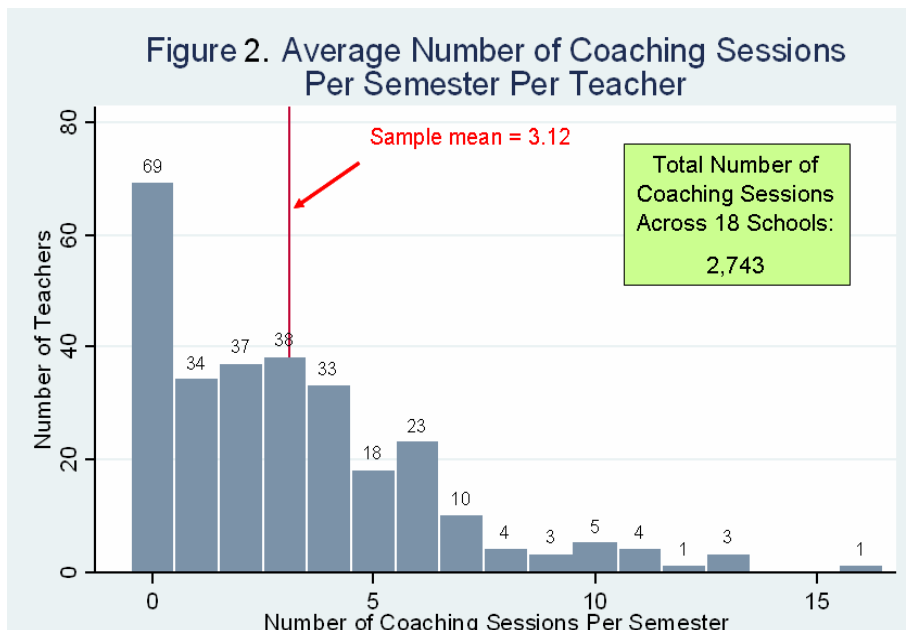
based on the 285 K-2 teachers in our 18 study schools who were eligible for LC coaching at some point during the first two years of LC program implementation (2005-2006 and 2006-2007.)

Descriptive Patterns in the Amount of Coaching

Each teacher could have been eligible for a maximum of four semesters of coaching during the first two years of LC program implementation. Within our study sample, 69 teachers were present and eligible for coaching for only one semester. Some 49 and 47 teachers were present and eligible for coaching two or three semesters respectively. The remaining 120 teachers—or about 42 percent—were present and eligible for coaching all four semesters. (See Figure 1.) The range in the total number of coaching sessions that any one teacher received spans from 0 to 39, with a median of 6 coaching sessions. Much of this variability can be accounted for simply by the number of semesters each teacher was present in the school while LC coaching was being offered. Consequently, rather than focusing in this paper on the total amount of coaching received, we have chosen to focus our analysis instead on the *number of coaching sessions receive per semester that a teacher was present in the school and eligible for this activity.*



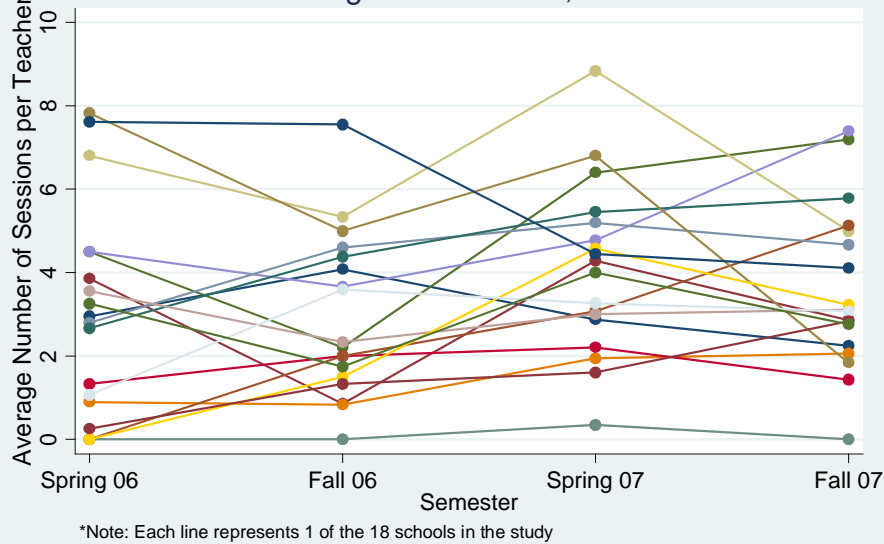
Prevalence of coaching sessions. A total of 2743 coaching sessions were recorded in these 18 schools. On average, teachers involved in the study received 3.12 one-on-one coaching sessions *per eligible semester*. (See Figure 2). Of note the standard deviation in coaching sessions per semester is 3.23. While some teachers received no coaching, others received 7 or more sessions per semester. Overall, these descriptive statistics suggest substantial variation among teachers in exposure to coaching.



On this account, we especially took notice of the 69 teachers identified in Figure 2 who received no coaching, even when they were present and eligible for this activity. About 70 percent of these teachers work in the two largest schools in the study. Some 36 teach at Curtis Elementary where an unusually low program implementation occurred with, on average, only 12 percent of the K-2 staff involved each semester. (This case will be discussed further in a later section of this paper.) An additional 15 of the 69 teachers who received no coaching worked at Clairborn Elementary, a school with about 24 K-2 classrooms. The professional development task for the coach at Clairborn was compounded by the relatively high teacher turnover at this school during the time of this study. Some 55 different teachers cycled through the 24 primary classrooms during the course of this data collection. In fact, 8 of the 15 non-exposed Clairborn teachers entered and then left the school before being receiving any coaching. The remaining 18 teachers in our study sample who received no coaching were spread relatively evenly across 10 other schools in the sample.

We see in Figure 3 that exposure to coaching also varies among schools and over time. The variability *among* the 18 schools—each represented by a line in the graph—is especially manifest. Though we see little evidence of school-specific trends in coaching exposure over the four semesters, the overall mean number of coaching sessions per teacher per semester does increase from 2.99 sessions in spring 2006 to 3.59 in fall 2007.

Figure 3. Average Number of Coaching Sessions Per Teacher Across the Eighteen Schools, over time



Coaching session duration. A classroom coaching session may include up to four basic components: 1) a pre-briefing between the coach and teacher; 2) an observation of the teacher’s practice; 3) possible modeling of a particular instructional practice on the part of the literacy coach; and 4) a debriefing session to reflect on the time spent together. As detailed in Table 1, only about 4 percent of the coaching sessions include all four of these subcomponents. (Note, within the LC framework, instructional modeling is considered an occasional activity. The core of coaching is the pre-briefing, observation, and debriefing). About 90 percent of the coaching sessions include a pre-briefing and a debriefing; and about 80 percent of coaching sessions involve observation of a teacher’s practice. As expected, instructional modeling occurred in only a subset of sessions—about 20 percent of the overall total.

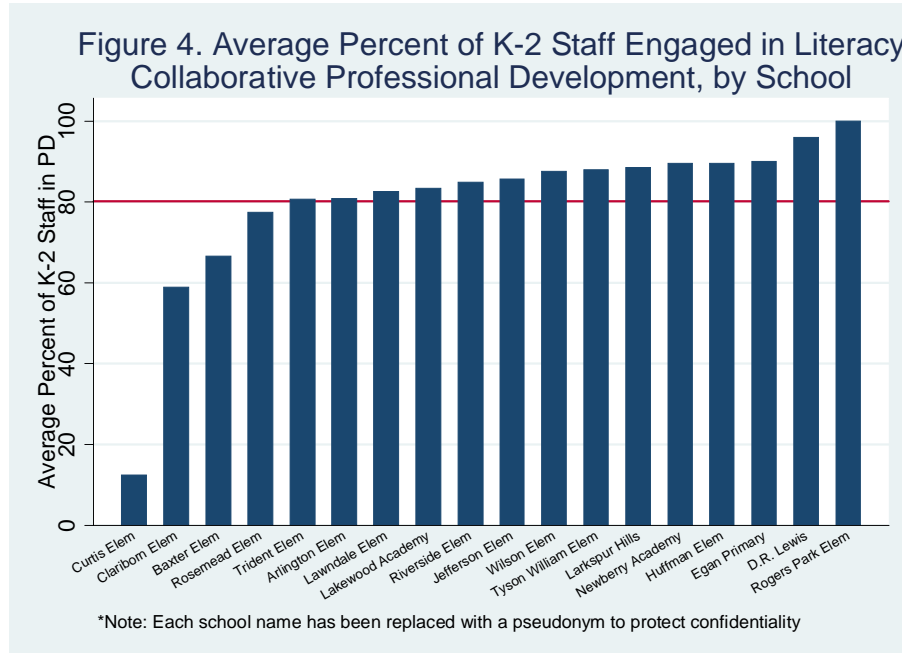
These four activities also tend to last for different lengths of time and thus account for unequal proportions of the coaches’ work with teachers. The classroom observations

are typically about the same length of time as modeling activities (39 versus 34 minutes). Pre-briefing and debriefing activities in contrast, are typically shorter in duration—only lasting about 15 and 20 minutes respectively. Overall, the logs indicate that the average coaching session lasts about 73 minutes, with a standard deviation of 20 minutes.

Table 1. Coaching Session Descriptives

Average Number of Coaching Sessions Per Teacher Per Semester: 3.12			
Average Length of Coaching Sessions: 73.11 minutes			
Coach Session Components	Number of Coaching Sessions with Component	Average Length (in minutes)	Standard Deviation of Length
Pre-briefing	87%	14.67	10.2
Observation	79%	39.12	18.76
Modeling	20%	33.59	18.42
De-briefing	91%	21.39	11.16

Coaching coverage. As noted earlier, this variable represents the average percent of each school’s K-2 staff who are eligible for coaching each semester who were, in fact, coached in that semester. In general, there was reasonably high coaching coverage across most schools in most semesters. Typically, coaches engaged about 80 percent of the eligible K-2 staff in LC professional development at any given time.(see Figure 4).



As one might expect, the degree of coaching coverage was related to the number of K-2 teachers in each school. Indeed, the bivariate correlation between K-2 staff size and coaching coverage is -0.46.

Examining Variability in Coaching Exposure both Within and Between Schools

The descriptive statistics presented above suggest noteworthy variation in the amount of coaching occurring both among teachers within each school, as well as across the 18 schools. Hierarchical Linear Model analyses allow us to decompose the variance in exposure to coaching among teachers both within and between schools. In addition, we examine how exposure to coaching varies in terms of both individual teacher background characteristics and features of school context.

The outcome of interest in these HLM analyses consists of the number of coaching sessions received in semester *i* by teacher *j* in school *k*. We began by estimating an unconditional model at levels 1, 2, and 3 in order to partition the variance across levels. Of the total variation in teachers' participation, 11 percent of it exists at the teacher level—

that is, among teachers within any given school; 89 percent of the variation occurs across schools. Although the major component of variation is clearly between schools, it is also clear that individual teachers did receive significantly different amounts of one-on-one coaching within the same school.

To offer a more descriptive account of these within-school results, we computed a 95 percent plausible value range for teachers' exposure to professional development within sample schools. In the average school, some teachers might receive as few as 2.25 coaching sessions per semester (i.e. the 95 percent lower bound) as compared to other teachers who may be receiving 5.00 or more coaching sessions per semester (i.e., the 95 percent upper bound). These differences prove substantial when aggregated over time. For example, suppose we consider two teachers present in the same school over the course of the full five semesters of the LC program to date (note we only have data on the last four of these semesters). If we assume coaching sessions of average duration as previously reported in Table 1, some teachers may have received less than 14 hours of one-on-one coaching while others have received over 30 hours of coaching over the same two and a half year period.

When we shift to examining *between*-school variability, the HLM analyses confirm descriptive patterns previously illustrated in Figure 3 which indicated substantial variation in exposure to coaching across the 18 schools. A 95 percent plausible value range provides a sense of the how much variability we can expect to observe across schools. The lower bound describes a school where most teachers receive no coaching in any given semester. In contrast, teachers in schools at the upper bound may receive about 7.5 coaching sessions per semester. The latter averages out to about 2 sessions per month, which is the target

level suggested by LC in its program guidelines. Given that the average length of a coaching session is about 73 minutes, the average teacher working in a high-exposure school for five semesters would be predicted to have received over 45 hours of one-on-one coaching.

Modeling Variation over Time (Level-1 Model)

In terms of model-building, we began by specifying a level-1 model for the number of coaching sessions per semester i for teacher j in school k (for a total of 810 semester-observations across 279 teachers who were present and eligible during at least one of the four semesters during which we collected data). Because earlier descriptive analysis indicates that the amounts of coaching varied across semesters, a set of fixed effects was included in the model, one for each semester in which coaching occurred (omitting the first semester as the reference category). We also included an indicator variable designed to allow us to investigate how much coaches work with teachers who newly enter their school at some point after the initiation of LC program. We are particularly interested in how these teachers, new to the school community, are engaged (or not) by their literacy coach. Specifically, the indicator variable identifies those individuals who enter the school after the Literacy Collaborative initiative has already commenced (herein called “New Teacher”) and equals 1 in the semester when this event occurs.⁷ The estimated coefficients associated with this variable capture possible differences in the amount of coaching received by a teacher new to the school during her first semester. Note that, at level 1, the set of semester fixed effects and the indicator variable, “New Teacher,” were all entered

⁷ The label, “new-to-school” teacher, should be distinguished from teachers who are new to the *teaching profession*. Indeed, when constructing the analytical model reported herein, we examined whether teaching experience was a significant predictor of our outcomes. We considered both categorical groupings such as “new”, “novice”, and/or “veteran”, as well as a linear function of number of years of teaching experience. None of these characterizations of teachers were significant predictors of amount of coaching received.

into the model grand-mean centered. As a result, the intercept, π_{0jk} , can be interpreted as an *adjusted* mean for teacher j in school k (adjusted for possible differences associated with the set of semesters for which each teacher j was present in school k).

At level 2, only the intercept—the adjusted number of coaching sessions per semester for teacher j in school k —was allowed to vary randomly. While there may be variation in the amount of coaching that occurred each semester within each school, the within-school cluster sizes were too small to be able to detect reliably this slope variation. At level 3 (school level), the intercept, β_{00k} , represents the adjusted average number of coaching sessions received by teachers in school k , and was allowed to vary randomly. The estimated coefficient on “New Teacher” was also allowed to vary randomly at level 3. Similarly, the increment for the amount of coaching in the most recent semester (i.e. SEM4) was found to vary randomly at the school level, though in this paper we make no attempt to account for that variation. This analytic model is represented in Figure 5.

Figure 5. Unconditional level-1 model

<p>Outcome: $Y_{ijk} =$ # of Coaching Sessions in semester i for teacher j in school k</p> <p>Level-1 Model:</p> $Y_{ijk} = \pi_{0jk} + \pi_{1jk} * (NEW_TEACHER_{ijk} - NEW_TEACHER \dots) + \pi_{2jk} * (SEM2_{ijk} - SEM2 \dots) + \pi_{3jk} * (SEM3_{ijk} - SEM3 \dots) + \pi_{4jk} * (SEM4_{ijk} - SEM4 \dots) + e_{ijk}$ <p>Level-2 Model:</p> $\pi_{0jk} = \beta_{00k} + r_{0jk}$ $\pi_{1jk} = \beta_{10k}$ $\pi_{2jk} = \beta_{20k}$ $\pi_{3jk} = \beta_{30k}$ $\pi_{4jk} = \beta_{40k}$ <p>Level-3 Model:</p> $\beta_{00k} = \gamma_{000} + u_{00k}$ $\beta_{10k} = \gamma_{100} + u_{10k}$ $\beta_{20k} = \gamma_{200}$
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Teacher Level Predictors (Level-2 Model)

We sought to identify possible explanatory factors at the teacher level that might account for variability in the amount coaching teachers receive per semester within the same school (π_{0jk}). Recall from the Conceptual Framework that we hypothesized that teachers': 1) orientations toward innovation, 2) prior experience with comprehensive literacy, and 3) role conception vis-à-vis colleagues might influence their engagement in LC. Thus, we explored the extent to which these teacher characteristics account for differences among teachers within the same school in the amount of coaching they received. We conducted exploratory analyses to consider a number of measures associated with these potential explanations for variance at level 2. The process led to the identification of three key predictors. These results are reported in Table 2.

The first and strongest predictor of coaching variation among teachers within the same school was a measure of each teacher's conception of her responsibilities via her colleagues ("role conception"). Teachers who score low on this measure take a passive role in their engagement with other colleagues. They are unlikely to initiate a professional interaction with a fellow teacher or to offer to help a colleague experiencing difficulty in their classrooms. In contrast, a high score on this measure indicates that a teacher considers it her role responsibility to reach out actively and help. Teachers who reported high levels on the role conception measure were likely to receive significantly more coaching. This finding is consistent with the Conceptual Framework, which suggests that individuals' role conceptions should influence their willingness to engage in new change efforts.

A second significant teacher-level predictor for the amount of coaching received was a measure called "school commitment," which assesses whether an individual teacher is committed to staying at the school and supporting its improvement efforts. Questions in this measure ask teachers if they look forward to going to work, would rather work somewhere else, and if they would recommend the school to parents. Even when comparing teachers with the same personal conception of their role vis-à-vis colleagues, teachers who reported higher levels of individual commitment to the school were likely to receive more coaching.

We also found a statistically significant association for a composite measure comprised of five survey items that asked teachers about their prior formal training in children's literacy ("prior literacy training"). In this study, coaches tended to work more often with teachers who were more limited in their prior literacy training. This negative

estimated coefficient on prior literacy training suggests that coaches were focusing attention on those teachers who were more novice in terms of the literacy pedagogy.

Taken together, these level-2 relationships indicate that coaches tend to work more frequently with teachers in their school whose prior literacy training is less extensive, but who are committed to the school and have an active orientation toward their colleagues.

We note that these findings are consistent with the zone of proximal development principle described earlier. When entered into the model simultaneously, these three explanatory variables accounted for 28.5 percent of the variance at level 2.

Table 2. *Estimated Fixed Effects, Variance Decomposition, and Proportion of Variance Explained, Final Level 2 Model.*

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>T-ratio</i>	<i>p Value</i>
Model for π_{0jk} (Adjusted # coaching sessions for teacher j in school k)				
Intercept, γ_{000}	3.645	0.473	7.710	0.000
School Commitment, γ_{010}	0.186	0.100	1.955	0.064
Role Conception, γ_{020}	0.261	0.100	2.597	0.010
Prior Literacy Training, γ_{030}	-0.233	0.096	-2.436	0.016
<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p Value</i>
Level-1 variance				
Variation across semesters, e_{ijk}	3.537			
Level 2 variance (teachers within schools)				
Outcome for teacher j in school k, r_{0jk}	0.332	258	340.301	0.001
Level 3 variance (between schools)				
Average outcome in school k, u_{00k}	3.883	17	645.156	0.000
Increment for new-to-school teachers, u_{10k}	2.528	17	71.888	0.000
Increment for semester 4, u_{40k}	3.865	17	125.104	0.000
<i>Proportion of Variance Explained, Final Level 2 Model</i>				
<i>Model</i>	<i>Average Number of Coaching Sessions for teacher j in school k (π_{0jk})</i>			
Unconditional Level-2 model	0.464			
Conditional model	0.332			
Proportion of variance explained	28.45%			

Number of level-1 records= 810; Number of level-2 records= 279; Number of level-3 records= 18

To illustrate the average magnitude of the relationship between the three predictors and the amount coaching received, consider two hypothetical teachers within the same school. The first teacher exhibits the three characteristics that, according to the final level-2 model, predict less coaching. In her survey reports, she is one standard deviation *below* the mean in terms of individual school commitment and her perceptions of her role

conception vis-à-vis colleagues (i.e., more professionally passive than the average teacher), and is also somewhat more experienced (one standard deviation *above* the mean in terms of her prior literacy training). The model predicts that this teacher will receive, on average, about 2.6 coaching sessions per semester. In contrast, a teacher who is one standard deviation *above* the mean on her measures of school commitment and role vis-à-vis colleagues as well as one-standard deviation *below* the mean in terms of prior literacy training (i.e., more novice) is predicted to receive about 4.3 coaching sessions per semester. The estimated difference between these two hypothetical teachers is about 1.7 coaching sessions per semester or about a two-thirds increase in exposure.

School Level Predictors (Level-3 Model)

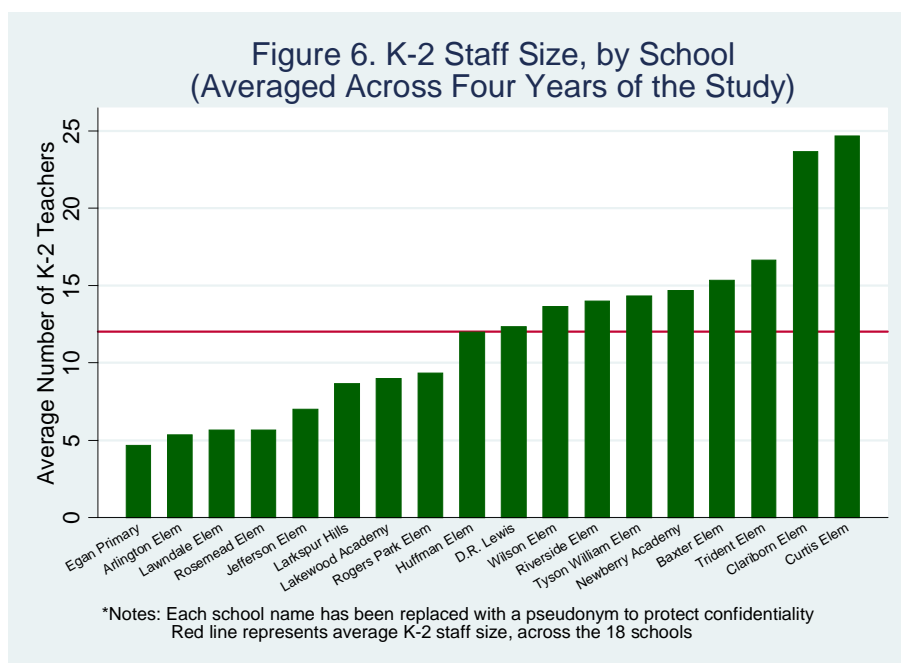
Each literacy coach confronted somewhat different normative and structural conditions in her own school. In principle, both normative and structural features of schools could prove influential in change efforts. For example, we hypothesized that the existence of an established professional culture in a school could possibly offset some of the discomfort associated with deep change efforts like the LC. Likewise, structural constraints such as staff size, availability of time and resources to conduct the LC activities, staff turnover rates, etc., could create significant barriers to successful implementation. Thus, we considered a wide range of school-level characteristics that might account for between-school variability in coaching activity.

In the level 3 model, we predict two outcomes of interest—adjusted average number of coaching sessions per semester in school k (herein referred to as the average exposure to coaching and represented by β_{00k}), and the differential amount of coaching received by a teacher who is new to the school (called “New Teacher” β_{10k}). As discussed

previously, the latter outcome represents the differential response to teachers who enter the school after coaches have already begun implementing the LC model.

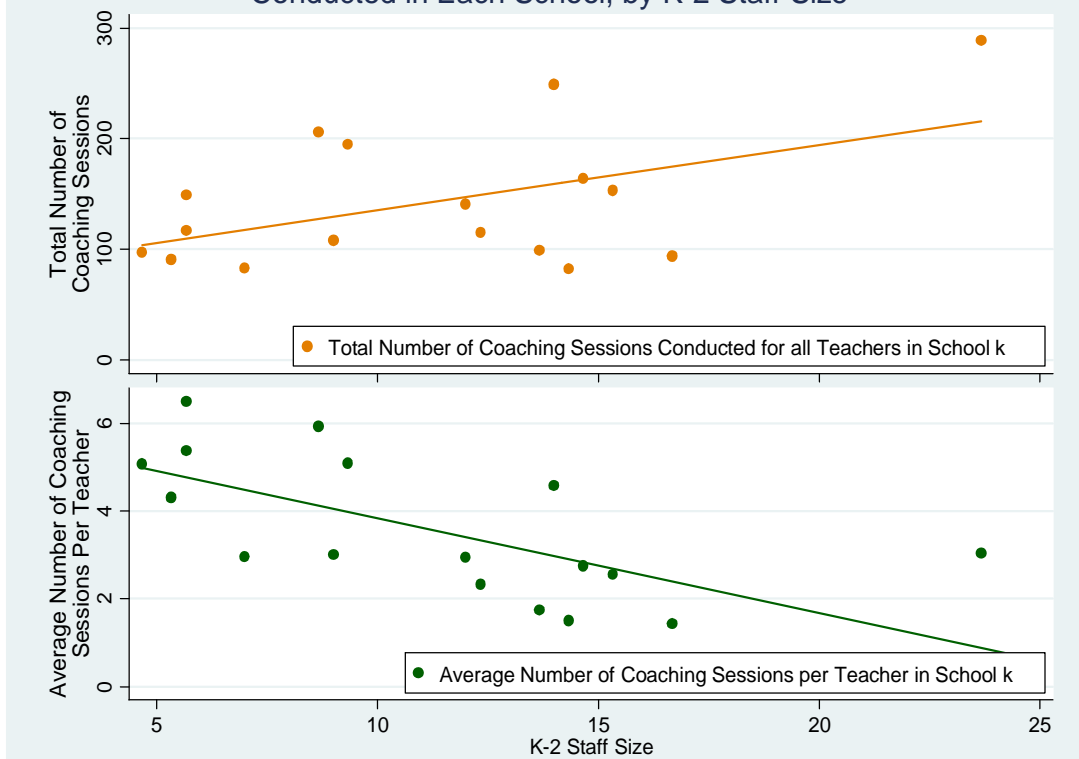
Examining variation in amount of coaching among schools. School staff size turned out to be the single most important predictor of differences among schools in average exposure to coaching. (See Table 3 for results.) The estimated coefficient indicates that a ten-person increase in staff size is associated with coaches offering 2.19 *fewer* coaching sessions per teacher per semester ($p < .001$). In fact, introducing K-2 staff size into the model explained 56 percent of the variation across schools in the average amount of coaching taking place. (See Table 4).

By way of background, the Literacy Collaborative suggests one coach for up to 12 teachers represents an ideal implementation. While many of our schools cluster around this standard, both substantially smaller and larger K-2 faculties exist in the study sample (see Figure 6 for an illustration of the distribution of K-2 staff size among the 18 schools).



Not surprisingly, the demands on a literacy coach who works with only 5 teachers are substantially different than the demands on a coach who must attend to 25 teachers. While the latter coach may actually conduct more coaching sessions overall in order to reach more teachers, she may simultaneously conduct fewer sessions *per teacher* than coaches working in smaller schools. Indeed, simple descriptive statistics reveal that the total number of coaching sessions conducted and the number of coaching sessions *per teacher* are related in opposite directions to staff size. Figure 7 provides descriptive evidence that coaches in smaller schools have the opportunity to work with each teacher more often.

Figure 7. Total Number of Coaching Sessions vs. Coaching Sessions Per Teacher Conducted in Each School, by K-2 Staff Size



Among the remaining school and coach characteristics (both of which pertain to the level 3 model), two measures were strongly associated with average exposure to coaching

once staff size was taken into account. Coaches were asked a number of questions in the baseline survey about the extent to which they perceived that the Literacy Collaborative program would be supported and valued by leadership in their school (“support for LC”). Among schools of the same size, a literacy coach who perceived above average levels of support for the LC in her school (i.e., one standard deviation above average) tended to coach each teacher 0.839 more times more each semester.⁸ This finding is consistent with the Conceptual Framework’s discussion of how the exercise of formal leadership shapes a school’s experience with LC. If school leaders support change efforts in their schools, they can influence its success both formal and informal ways—for example, by formally carving out additional time for teachers to engage in LC related activities as well as informally by expressing their enthusiasm for the initiative and encouraging participation. Together, the size of a school’s K-2 staff and the coach’s perceived support for the LC initiative accounted for about 63 percent of the variance in outcome.

A second coach measure also proved to be a strong predictor—the coach’s report of her own commitment to working in the school (“coach’s school commitment”). This is a parallel measure, based on the same survey items, as was entered into the model at the teacher level. At level 3, it represents a characteristic of the *initiator* of one-on-one coaching activities (the coach) instead of the *recipients* (teachers at level 2). While holding constant K-2 staff size and the coach’s perceptions about support for the LC model in her school, the coach’s commitment to the school (again as reported at the beginning of the field trial) contributes significantly to the average exposure to coaching. That is, net of

⁸ This estimate, γ_{003} , of the partial regression coefficient is in Table 3 of the fixed effects from the final level 3 model. γ_{003} can be interpreted in the following way: One standard deviation difference in the measure, SPLC, is associated, on average, with a 0.839 positive difference in the amount of coaching each teacher receives in school k per semester, holding constant the schools’ average K-2 staff size and the other significant predictor in the model for β_{00k} , the coach’s school commitment.

effects associated with school size and perceived support for the LC program, a coach who is above average on school commitment (plus one standard deviation) is predicted to conduct 0.417 more coaching sessions per teacher per semester. Taken together, these three explanatory variables account for about 73 percent of the variation in the outcome of interest (see, again, Table 4 on proportion of variance explained).

Table 3. Final Model for Three-Level Analysis of Coaching Exposure

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>se</i>	<i>t-ratio</i>	<i>p Value</i>
Model for L1 Intercept, π_{0jk} , (Adjusted # coaching sessions per semester for teacher j in school k)				
Model for “Average Coaching”—the intercept, β_{00k} , (Adjusted # of coaching sessions per teacher in school k)				
Intercept, γ_{000}	3.675	0.258	14.236	0.000
Avg. K-2 Staff Size, γ_{001}	-0.219	0.044	-4.944	0.000
Coach’s School Commitment, γ_{002}	0.417	0.227	1.833	0.088
Support for LC, γ_{003}	0.839	0.205	4.098	0.001
Model for β_{01k} , (Fixed Effect of Teacher School Commitment on π_{0jk})				
Intercept, γ_{010}	0.195	0.100	1.948	0.052
Model for β_{02k} , (Fixed Effect of Teacher Role Conception on π_{0jk})				
Intercept, γ_{020}	0.266	0.101	2.644	0.009
Model for β_{03k} , (Fixed Effect of Teacher Prior Literacy Training on π_{0jk})				
Intercept, γ_{030}	-0.228	0.096	-2.376	0.018
Model for L1 Slope, π_{1jk} , (Average increment in # coaching sessions for “new-to-school” teacher j in school k)				
Model for “New Teachers”—the intercept, β_{10k} , (Average increment in # coaching sessions for “new-to-school” in school k)				
Intercept, γ_{100}	0.786	0.427	1.841	0.086
Avg. K-2 Staff Size, γ_{101}	-0.256	0.084	-3.028	0.010
Professional Community, γ_{201}	-0.041	0.369	-0.110	0.914
Size x Prof. Community, γ_{103}	0.122	0.063	1.923	0.075
Model for L1 Slope, π_{2jk} , (Average increment in # coaching sessions for semester 2 for teacher j in school k)				
Model for Intercept, β_{20k} , (Average increment in # coaching sessions for semester 2 in school k)				
Intercept, γ_{200}	0.215	0.196	1.098	0.273
Model for L1 Slope, π_{3jk} , (Average increment in # coaching sessions for semester 3 for teacher j in school k)				
Model for Intercept, β_{30k} , (Average increment in # coaching sessions for semester 3 in school k)				
Intercept, γ_{300}	0.998	0.190	5.248	0.000
Model for L1 Slope, π_{4jk} , (Average increment in # coaching sessions for semester 4 for teacher j in school k)				
Model for Intercept, β_{40k} , (Average increment in # coaching sessions for semester 4 in school k)				
Intercept, γ_{400}	0.614	0.499	1.228	0.237

Table 3. (continued)

<i>Random Effects</i>	<i>Variance Component</i>	<i>df</i>	χ^2	<i>p Value</i>
Level-1 variance Variation across semesters, e_{ijk}	3.537			
Level 2 variance (teachers within schools) Outcome for teacher j in school k, r_{0jk}	0.327	258	336.708	0.001
Level 3 variance (across schools) Average outcome in school k, u_{00k}	1.058	14	203.507	0.000
Increment for new-to-school teachers, u_{10k}	1.577	14	46.157	0.000
Increment for Semester 4, u_{40k}	3.700	17	123.037	0.000

Examining variation in differential coaching for new teachers. As noted earlier, our hierarchical analysis at level 3 also focused on a second outcome— differential amount of coaching received by teachers who enter their school after the Literacy Collaborative initiative was already under way (for simplicity, referred to herein as “New Teacher,” β_{10k}). This outcome was of interest because field accounts suggested that coaches across the study might respond quite differently to these late-entering teachers. On average, teachers new to the schools tend to receive 0.65 more coaching sessions in their initial semesters than other colleagues.⁹ To gauge the magnitude of the variation among schools in coaching for new-to-school teachers, it is useful again to calculate a plausible values range: We expect 95 percent of these school-level differentials to fall within a range from

⁹ This estimate of the coefficient $\gamma_{100} = .65$ comes from an unconditional model at level 3 (not shown here). Therefore, this estimated level 3 intercept in the equation for “new to school teachers” additional coaching, γ_{100} , represents the mean across the schools *because* no predictors have been entered into the model for β_{10k} . In the final model, γ_{100} is estimated to be slightly larger ($\gamma_{100} = .79$) because the intercept in this model represents the expected additional coaching for teachers in a school of average size and average level of professional community.

-2.13 to +3.43 additional coaching sessions for teachers new to the school.¹⁰ This suggests extensive variation among schools in the amount of coaching directed at teachers new to the school. In some schools, coaches actually focus much *less* on new teachers than the teachers who were already present (negative coefficients); whereas in other schools, coaches focus much *more* on new teachers than on others (positive coefficients).

We examined a range of level-3 predictors—both school and coach characteristics—in an attempt to account for this wide variation in attention to new-to-school teachers. As was the case with the adjusted mean prevalence of coaching in each school, the average K-2 staff size is also related to how coaches respond to new teachers. When a new teacher entered one of our large schools, coaches were less likely to focus immediate attention on them. Indeed, K-2 staff size alone accounted for 31 percent of the variation in how coaches respond to incoming teachers.

The overall pattern of school size effects suggests that coaches may be confronted with strategic allocation decisions in larger schools. Since they cannot work simultaneously with everyone, they must decide how to spend their finite time most effectively. In large schools with underdeveloped norms of professional community or trust, we might expect coaches to choose to work more readily with teachers new to the school. These incoming teachers represent a receptive foothold in an otherwise large and challenging context. In contrast, the role of the school's base normative state may have little effect in smaller schools, since these coaches have the time to attend to all teachers

¹⁰ As explained in footnote 8, the estimated level-3 intercept in the equation for “new to school teachers” additional coaching, γ_{100} , is based on the unconditional model and thus represents the mean across the schools because no predictors have been entered into the model for β_{10k} . The range of plausible values is also based on this unconditional model for the average “new teacher” increment in school k , whereas the estimates presented in Table 4 come from the final level 3 model. When calculating the plausible value range, we use the relevant estimate of variance on the intercept from the unconditional—rather than the conditional— model, which equals $\tau_{10k} = 1.42$.

and therefore no strategic allocation decision is forced. (Individual teachers can of course refuse coaching in both kinds of schools.) In other words, we expect that these two characteristics of schools—their size and the strength of the base normative conditions—may interact with one another.

We actually found some evidence to support this hypothesis. By introducing an interaction term, we estimated whether there was a significant difference in the effect of base normative conditions for schools of different sizes. The estimated coefficient on the interaction term¹¹ indicates that the effect of professional community on the amount of coaching new-to-school teachers receive may well depend on average K-2 staff size (see the estimate of $\gamma_{103} = 0.122$, $p < .10$ in Table 4). This finding is consistent with the idea that in large schools characterized by weak professional relations, coaches direct more of their efforts toward teachers who are new to the school.

To illustrate the nature of these associations, we represent in Figure 8, based on these HLM results, the relationship between the base state of professional community and the amount of attention new-to-school teachers receive among the *larger* schools in the sample (i.e., average K-2 staff size greater than or equal to 12 teachers). We see that in large schools with a weak base of professional community, new-to-school teachers tend to receive somewhat more coaching than other teachers. In contrast, in large schools with strong working relations among the staff at the outset of the study, new teachers were not likely to receive more coaching. While these findings should be viewed with caution as they are based on a small sample of schools, they do suggest that coaches may allocate

¹¹ The interaction term was constructed by creating a new school level variable by multiplying each school's grand-mean centered average K-2 staff size by the grand-mean centered (and standardized) measure of professional community. This variable was included in the model, along with the two "main effects" which comprise it. The coefficient on the interaction term represents the increase in the slope on professional community associated with a 1-person increase in average K-2 staff size.

their work efforts in complex ways depending on both structural and normative features of their local school context.

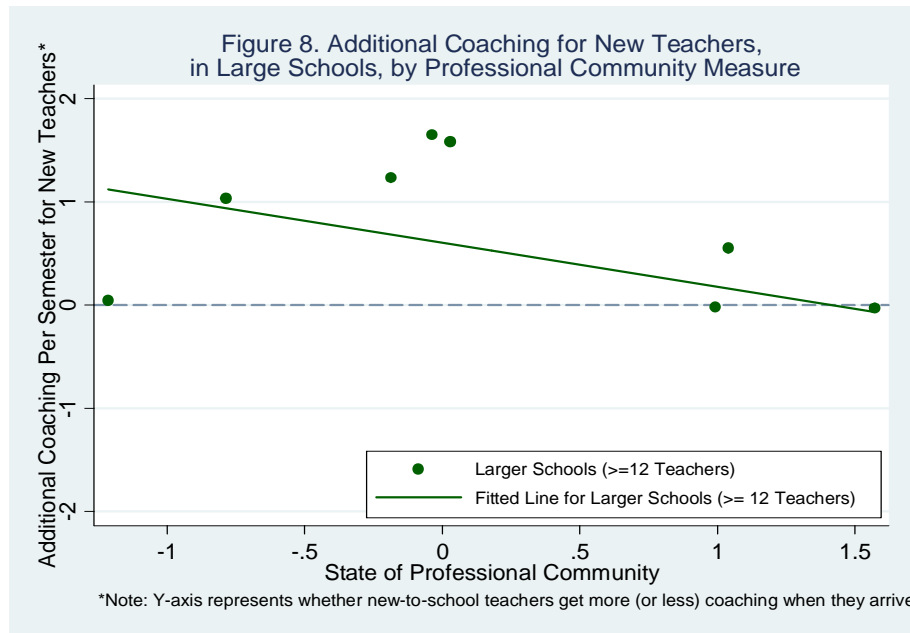


Table 4. Proportion of Variance Explained, Final Level 3 Model

Outcome	Model	Variance Component	% Reduction in Total Variance
Intercept, β_{00k} (Adjusted # of coaching sessions per teacher <u>in school k</u>)			
	Unconditional L3 model	3.883	
	Conditional models:		
	Added <i>Avg. K-2 Staff Size</i>	1.700	56.21 %
	Added <i>Support for LC</i>	1.419	63.46 %
	Added <i>Coach's School Commitment</i>	1.046	73.06 %
Intercept, β_{10k} (Average increment in # coaching sessions for "new-to-school" <u>in school k</u>)			
	Unconditional L3 model	2.017	
	Conditional models:		
	Added <i>Avg. K-2 Staff Size</i>	1.382	31.48 %
	Added <i>Professional Community & Interaction Term</i>	1.058	47.55 %

Together, the variables in this model account for about 48 percent of the variation in differential amount of coaching received by teachers who enter their school late. (See again Table 4.)

Summary and Preliminary Conclusions

This paper provides new evidence on the real-time implementation of coach-based professional development. In particular it brings to light the immense variability in coaching activities, even within a model that provides extensive training and regularity. One might expect that such variation is even greater in the “real world”, which includes instances where coaches are simply assigned to a coaching position often without the benefit of the explicit instructional and training framework provided by the Literacy Collaborative.

Although the Literacy Collaborative model intends for the coach to engage every K-2 literacy teacher within a school, we found that many factors may affect the extent to which this ideal is met. Our analyses reveal significant variability in the amount of coaching teachers received both within and across schools. We found that teachers with less prior training in early literacy, who proactively engage with their colleagues, and who report strong commitment to their school tend to receive a disproportionate amount of the coach’s time.

As for the variation among schools, most of this is accounted for by school size alone (56 percent). This suggests that successful implementation of coaching initiatives may hinge largely upon a reasonable coach-to-teacher ratio. In addition, when coaches are

strongly committed to their school and perceive that the initiative enjoys clear support from teachers and the principal, they are likely to conduct more coaching overall.

We also found some evidence that, especially in schools with larger faculties, coaches may be forced to make strategic decisions about how to allocate their time and energy. The nature of these allocation decisions in turn seem to rest on an interaction of faculty size and the base work relations in the schools.

We note that some measures that we expected to predict variation in the amount of coaching received did not do so. For example, our direct measure of a coach's orientation toward innovation did not have a statistically significant relationship with the amount of coaching. On balance, the statistical power of this study to detect effects at level 3 is quite limited given the sample size of 18 schools. Therefore, while other characteristics beyond those reported in the final model may play a role in variation in exposure to professional development, this study offers only modest power for examining the full range of possibilities here.

In closing, we return to a basic descriptive finding in this study that an average teacher working in a high-implementation school for the full five semesters received about 45 hours of one-on-one coaching. This represents a substantial opportunity for a teacher to work individually with a “more expert” other in the deeply personal work of reflecting upon and improving their practice. Whether this substantial dedication of time and energy ultimately leads to higher-quality instruction, however remains an open question. Subsequent reports associated with the larger project will investigate directly whether exposure to LC's one-on-one coaching triggers the desired causal cascade that results in improved outcomes for students in these 18 schools.

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