

Implementing Literacy Coaching: The Role of School Social Resources

Lindsay Clare Matsumura
University of Pittsburgh

Helen E. Garnier
*LRDC/University of Pittsburgh and Center for Professional Development and the Biological
Sciences Curriculum Studies*

Lauren B. Resnick
LRDC/University of Pittsburgh

This study investigates the influence of a school's pre-existing social resources on the implementation of a comprehensive literacy-coaching program (Content-Focused Coaching [CFC]). Elementary schools were randomly assigned to receive a CFC-trained coach (n = 15 schools) or to continue with the literacy coaching resources that are standard for the district (n = 14 schools). Ninety-six fourth- and fifth-grade teachers participated in the study (n = 63 CFC and n = 33 comparison). Survey results indicate that teachers in the CFC schools participated more frequently in the coaching activities that emphasized planning and reflecting on instruction, enacting instruction, and building knowledge of the theories underlying effective reading comprehension instruction compared to teachers in the comparison schools. After 1 year, teachers strongly believed that CFC coaching helped improve their instructional practice. Principal leadership was the key resource supporting implementation of the program positively predicting greater teacher participation in coaching activities and perceived usefulness of these activities along with coaches' training in the CFC program and less experienced teachers. Unexpectedly, a school's pre-existing culture of teacher collaboration negatively predicted teachers' coaching experiences. CFC coach interviews contribute to understanding the interactions of social resources within schools that facilitated or hindered program implementation. Implications for the design and implementation of effective instructional coaching policies in districts are discussed.

Keywords: *literacy, coaching, school reform*

INSTRUCTIONAL coaching has been adopted by nearly every urban district in the country and widely endorsed by policymakers at both the state and federal levels as a strategy for improving student achievement (Costa & Garmston,

2002; Gamse, Jacob, Horst, Boulay, & Unlu, 2008; Marsh et al., 2008; Walpole & McKenna, 2004). The goal of instructional coaching is to create the types of embedded, practice-based learning opportunities for teachers that research

The work described here was supported by a Teacher Quality Grant from the Institute for Educational Sciences, R305W060027, "Content-Focused Coaching® for High Quality Reading Instruction." The authors are appreciative of the support provided by IES. All errors of fact, omission, and/or interpretation are solely the responsibility of the authors. They also would like to thank their colleagues who participated in this work including Donna DiPrima Bickel, Allison Caplovitz, Richard Correnti, Brian Junker, Kathleen McCarthy, Heather Newlin, and Mary Sartoris.

indicates are effective for improving the quality of instructional practice and student learning (see studies reviewed in Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009). Despite the widespread endorsement of coaching, evidence is mixed that coaching is an effective strategy for improving instruction and learning. Although some research suggests that coaching supports teachers' ability to implement reform practices more effectively in their classrooms (Joyce & Showers, 1996; Wei et al., 2009), only limited research provides evidence that coaching increases student achievement (Gamse et al., 2008; Garet et al., 2008; Marsh et al., 2008).

One explanation for the paucity of evidence supporting coaching effects on student achievement is that the implementation of coaching policies and programs varies widely between schools (Duessen, Coskie, Robinson, & Autio, 2007). To understand why this is the case, researchers have investigated the relationship between various contextual factors in schools and districts and teachers' coaching experiences. These contextual factors include policies for determining who is qualified to serve as a coach (Allington, 2006; Coburn & Russell, 2008; Frost & Bean, 2006; Roller, 2006), definitions of the coaching job (Duessen et al., 2007; Rivera, Burley, & Sass, 2004), school-level norms for teachers' professional community (Stoelinga, 2008), teachers' experience level (Smith & Desimone, 2003), and principal leadership (Garmston, 1987; Mangin, 2007, 2008). Few studies, however, directly link pre-existing contextual factors in schools to variable implementation of coaching programs or investigate the relative contribution of these factors to teachers' coaching experiences.

In this study, we investigate the influence of a school's social resources—principal leadership, school-level norms for teachers' professional community, and participant characteristics—on the initial implementation of a literacy-coaching program (Content-Focused Coaching [CFC]; Staub & Bickel, 2003; Staub, West, & Bickel, 2003). Based on principles of cognitive apprenticeship and practice-based professional learning, CFC provides intensive and ongoing professional development to coaches aimed at improving their knowledge base, instructional

skills, and ability to work effectively with teachers (Ball & Cohen, 1999; Brown, Collins, & Duguid, 1989; Collins, Brown, & Holum, 1991). Drawing also on research and theory indicating that the interactions between coaches and teachers in schools are influenced by larger systems and policies at the district level (Camburn, Kimball, & Lowenhaupt, 2008; Coburn & Russell, 2008; Mangin, 2008), principals and central-office leaders participate in the professional development sessions along with coaches. The purpose for this strategy is to establish a common vision of good literacy coaching and reading comprehension instruction that is supported across the levels of the school system and to help establish a collaborative relationship between principals and their coaches so that they work together to plan for the instructional needs of their teachers.

The study reported here follows 96 fourth- and fifth-grade teachers participating in the 1st year of the CFC program. Twenty-nine urban elementary schools were randomly assigned to participate in the CFC program ($n = 15$ schools) or to continue with the literacy coaching resources that are standard for the district ($n = 14$ schools). Teachers provided survey responses at the beginning and end of the year, and coaches were interviewed near the end of the year. We begin by examining changes in teachers' self-reported coaching experiences in schools that participated in the CFC program and in schools serving as a comparison sample to understand how a school's participation in the CFC program influences teachers' literacy coaching experiences. We then investigate the relative contribution of different features of the school environment measured at the beginning of the school year (prior to the introduction of CFC coaches to schools) to variability in teachers' experience of coaching assessed at the end of the 1st program year to understand how different social resources in a school influenced the initial implementation of the program. Interviews with coaches are examined to cross-check the survey results and to gain an understanding of the processes by which specific features of the school environment influenced coaches' work with teachers. Our goal is to add to the currently limited body of information about the contextual factors that influence

the enactment of literacy coaching in schools and to generate information that supports more effective implementation of coaching programs and policies. Our first research question focuses on how a school's participation in the CFC program influences teachers' experiences of literacy coaching. Our second question centers on how contextual factors in schools, including principal leadership, norms of the professional community in a school, and teacher and coach characteristics, influence the school-level implementation of the CFC program.

Contextual Factors Associated With Variability in Coaching Implementation

Considerable variability exists in the amount, type, and quality of coaching received by teachers (Camburn et al., 2008; Coburn & Russell, 2008; Duessen et al., 2007). In the following sections, we describe research focused on understanding the source of this variability including the criteria for coach qualifications, definition of the coaching job, principal leadership, norms for teachers' professional community, and participants' level of experience.

Criteria for coach qualifications. Standards for qualifications of reading and literacy coaches only recently have been developed (e.g., International Reading Association, 2004; Roller, 2006). School districts, and even individual principals, generally use their own discretion to determine who is qualified to serve as a coach, and the criteria that they use may not be aligned with the standards developed by professional organizations (Roller, 2006). Moreover, research indicates that teachers can be hired to serve as coaches for reasons altogether different from professional acumen (e.g., to avoid a lay-off) (Mangin, 2008). Consequently, instructional coaches may not possess the subject-matter content knowledge, pedagogical expertise, or coaching skills necessary to work effectively with teachers (Allington, 2006; Frost & Bean, 2006). In some schools, coaches may have less knowledge and expertise than the teachers they are hired to instruct.

Definition of the coaching job. Although most coaching initiatives, such as *Reading First*,

define a coach's responsibilities as working primarily with teachers to improve their instructional practice, a coach's job in many schools also includes a number of other administrative and managerial responsibilities. These responsibilities can include coordinating assessments, organizing school programs, and providing interventions to individual students (Camburn et al., 2008; Duessen et al., 2007; Marsh et al., 2008). Marsh and colleagues, for example, found that literacy coaches in Florida's middle schools spent less than half their time on average working with individual teachers to improve their instruction, and more than half reported that coordinating and administering assessments hindered their ability to work with teachers.

How coaches themselves understand and define their job has been further linked to variation between schools in both the frequency of teachers' contact with coaches and the content of those interactions. Duessen et al. (2007), for example, found that although all coaches managed multiple responsibilities, how they understood and defined the focus of their work varied widely across individuals and schools. Coaches who defined their job as primarily working directly with teachers to improve their practice spent between 41% and 52% of their time in this capacity. In contrast, coaches who focused their job on working directly with students spent only 14% of their time working with teachers to improve their instruction.

Norms for the professional community. The creation of strong professional communities in schools is widely considered an important condition for, or enabler of, school improvement (e.g., McLaughlin & Talbert, 2006). Collaborations between teachers characterized by shared goals, a focus on student learning, and trust can lead to improvements in instruction and learning by expanding teachers' access to expertise and knowledge and sustaining teachers' motivation to continually improve their instruction (Louis, Marks, & Kruse, 1996; McLaughlin & Talbert, 2006; Saunders & Goldenberg, 2005). Coaching often is seen as a vehicle for bringing about such collaborative interactions between teachers.

Despite a wealth of evidence indicating that the norms of a school's professional community

play a critical role in the implementation of instructional reform policies (Bryk & Schneider, 2002; Coburn, 2001; Coburn & Stein, 2006; Leana & Pil, 2006; Talbert & McLaughlin, 2006), little research has investigated the role that the existing professional norms in a school plays in the implementation of coaching policies. One exception is a case study conducted by Stoelinga (2008) that discovered that informal teacher leaders exert considerable influence on the implementation of literacy coaching in schools, with positive and negative consequences for teacher participation.

Teacher experience. Although numerous studies have explored the relationship of teacher characteristics and student achievement (see studies reviewed in Darling-Hammond, 2002; Ferguson & Womack, 1993; Goldhaber & Brewer, 2000), far less research has focused on the relationship between teachers' experience level and their participation in professional development activities. Theoretical models of the different stages of teachers' careers suggest that teachers' experience level would play a significant role in their willingness to participate in professional development (Burke, Fessler, & Christensen, 1984; Huberman, 1989; Steffy & Wolfe, 1998). On the whole, novice teachers are described as actively seeking support and guidance for improving their instructional skills and as being willing to experiment with new teaching strategies. More veteran teachers, in contrast, are overall less interested in improving their instructional skills, although they vary greatly in terms of their willingness to embrace professional growth. This characterization of teachers is supported by Smith and Desimone (2003), who found that, in most content areas, teachers' participation in professional development increases across the first 8 years of teaching and declines in the later phases of their careers. Chval, Abell, Pareja, Musikul, and Ritzka (2008) found as well that teachers' years of experience were associated with differences in perceptions of their professional development needs. No research to our knowledge, however, provides evidence linking teachers' stages of career development to their participation in coaching activities in specific.

Principal leadership. As with other educational reforms, research indicates that principals' actions and their beliefs with regard to the roles and responsibilities of a coach play an important role in implementing coaching in schools (Authors, in press; Camburn et al., 2008; Mangin, 2007, 2008). In their evaluation of a district-wide literacy coach initiative, for example, Camburn and colleagues (2008) found that coaches and district administrators overseeing the work of coaches reported that principals' demands on coaches to perform administrative and managerial tasks were a significant impediment to their work with teachers. Although little empirical evidence directly links the quality of principal leadership to the amount and type of coaching received by teachers, researchers suggest that coaching may be more effective in schools where principals actively support their coaches, share leadership, and engage more directly in reform activities (Authors, 2009; Mangin, 2007, 2008; Taylor, 2008). Burch and Spillane (2003) found that principals who are more active in literacy reform activities at their schools are more likely to support the efforts of their literacy coaches. To our knowledge, little research directly examines the relation between principal leadership and the successful implementation of a coaching program as measured by teachers' participation in specific coaching activities.

Content-Focused Coaching

For the purpose of this study, school district leaders and the developers of the CFC program worked together to recruit and hire individuals with an established knowledge of reading instruction to be trained as CFC coaches. Over the course of the academic year, the individuals hired to be CFC coaches participate in three days of professional development a month led by fellows from the University of Pittsburgh's Institute for Learning (IFL).¹ The professional development sessions focus on building coaches' knowledge of the theory and research underlying effective reading comprehension instruction with a special emphasis on the role of classroom talk in supporting students' understanding of texts (Beck, McKeown, & Kucan, 2002; Block

& Pressley, 2002; Hirsch, 2003, 2006; New Standards, 1999; Resnick, 1995; Resnick & Hall, 2001; Sinatra, Brown, & Reynolds, 2002; Willingham, 2006).

To improve the quality of classroom talk, CFC coaches study and apply techniques from *Questioning the Author* (Beck & McKeown, 2006). *Questioning the Author* is an approach to comprehension instruction that focuses on helping students actively build meaning from a text. To accomplish this goal, teachers develop questions that guide students to develop a coherent representation of the text as they read or as the text is read aloud to them. In preparation for this, teachers plan lessons where they select coherent texts, identify the major ideas that students should construct from a text, anticipate potential problems that students might have with comprehension such as identifying parts of the text where an author might not have been clear, and identify stopping points in the text to check students' understanding. Teachers also develop interpretive questions that are intended to promote and deepen students' comprehension and conceptual (higher level) understanding.

CFC training processes are theoretically grounded in the principles of cognitive apprenticeship (cf. Brown et al., 1989; Collins et al., 1991; Rogoff, 1990) and practice-based professional development (Ball & Cohen, 1999). Multiple models of a skill are provided to the coaches and are discussed and reflected on as a group (Schon, 1983, 1987). Coaches then practice the skill with assistance from the IFL team and their coach colleagues, before enacting the skill independently with teachers at their school. For example, first, the IFL fellows model *Questioning the Author* lessons based in the district's curricula for the coaches. The coaches then teach *Questioning the Author* lessons in classrooms and receive feedback on their efforts by the IFL fellows before moving on to model lessons in teachers' classrooms independently. Coaches also are observed working with teachers. Specifically, coaches are observed planning a lesson with a teacher, modeling the lesson in the teacher's classroom, and reflecting with the teacher about the next steps for student learning. All of the CFC coaches, over the course of the year, are provided with the opportunity to receive feedback on their instructional and

coaching practice and to observe and give feedback to their fellow coaches.

Principals and central office leaders also participate in the CFC coach training 1 day a month to establish a vision of effective reading comprehension instruction and the roles and responsibilities of a literacy coach that is shared across the levels of the school system. An additional reason for including principals in the professional development sessions is to educate them about the ways they can support their coach, for example, by creating time in the work week for coaches to meet with teachers and encouraging teachers to seek instructional advice from the coach. A second purpose of including principals in the training is to encourage coaches and principals to work together toward the goal of improving instructional practice. Principals and coaches are given assignments to complete together between sessions that are intended to encourage principals to take an active part in the coach's work with teachers (e.g., the principal is assigned to watch the coach model a lesson in a teacher's classroom and debrief with the teacher and coach afterward about how the lesson went). An additional reason for including district leaders in the training is to encourage them to hold principals accountable through their supervisor's oversight for implementing the CFC program at their school.

Mirroring their own training experiences, CFC coaches are expected by the program developers to meet with teachers in weekly grade-level team meetings to study the theories underlying effective reading comprehension instruction. Coaches also are expected to meet individually with teachers on a monthly basis to engage in a cycle of planning, enacting instruction by modeling lessons and observing teachers, and reflecting on instruction. The purpose of these activities is to model new ways of thinking about instruction and to provide direct assistance to teachers for improving the quality of their reading comprehension instruction. Improved reading comprehension instruction is expected, in turn, to improve the quality of students' reading achievement.

Research Questions and Hypotheses

Our study adds to the limited body of information describing the contextual factors in schools that influence the enactment of a literacy-coaching

program when it is first introduced. Studying CFC provides a unique opportunity for this investigation because the program is designed to address multiple problems associated with the implementation of coaching identified in past research (i.e., variable criteria for coach qualifications, lack of knowledge and skill on the part of coaches, and varying definitions of the coaching job), thus enabling the specific role of contextual factors outside of the influence of the CFC program to be presented in sharper relief.

The research questions we address are as follows:

1. How does a school's participation in the CFC program influence teachers' experience of literacy coaching (i.e., how frequently teachers engage in different coaching activities, the content emphasized in coaching activities, and teachers' perception of the usefulness of these coaching activities for improving their practice)?
2. How do contextual factors in schools, including principal leadership, norms of the professional community in a school, and teacher and coach characteristics, influence the school-level implementation of the CFC program?

We first explore if and how the CFC program significantly engaged teachers in participating schools. We compare responses of teachers in randomly-selected CFC and comparison schools on surveys administered before the CFC coaches were introduced in schools at the beginning of the year and again at the end of the year. We expected that the CFC program would positively influence teachers' coaching experiences because the training processes for the coaches and their intended work with teachers is highly specified, is based on robust theories of learning, and includes a focus on creating the organizational conditions that support coaching by engaging principals and other district leaders in the training. Specifically, we expect that teachers whose school participates in the CFC program will

- meet more frequently with coaches,
- engage more frequently in coach-led activities that emphasize building knowledge of the theory underlying

effective pedagogy, planning and reflecting on instruction, enacting skills learned in the CFC program during instruction, differentiating instruction, and building a positive learning community, and

- increase their perception of literacy coaching as being useful for improving their instructional practice.

We then investigate the relative contribution of different contextual features of the school environment at the start of the school year to explain variability in teachers' participation in literacy coaching and perception of its usefulness. For these analyses, we examine the relationship between the characteristics of principal leadership, norms of the professional school community, and experience level of teachers and coaches assessed at the beginning of the year to teachers' reported experience of coaching assessed at the end of the year. Interviews with coaches also are analyzed to gain a deeper understanding of the ways in which specific features of the school environment influence coaches' work with teachers.

Although coaches receive the same professional development in the CFC program, those who are more experienced working with teachers might use that experience to better implement or make better use of the CFC training at their school. We expect that

- years of coaching experience will positively predict teachers' participation in coaching.

Based on research described earlier linking a school's social resources to the effective implementation of educational reforms in general, we expect that the quality of a school's principal and existing teacher community will encourage implementation of the CFC program in schools. Specifically, we expect that teachers will

- participate more frequently in literacy coaching in schools where the principal is perceived as having actively participated in the past in literacy reform efforts and being willing to share leadership responsibilities and
- participate more frequently in literacy coaching in schools with an existing

culture of teacher collaboration and trust.

Based on theoretical models of teachers' career development and research suggesting that novice teachers are more likely to seek professional development opportunities and experiment with new teaching strategies, we expect that

- years of teaching experience will negatively predict teachers' participation in coaching, and
- greater recent participation in professional development opportunities will positively predict teachers' coaching participation.

Method

Overview of the Study

The study is located in a medium-sized urban district in the Southwest that serves large numbers of English language learning (ELL) students from low-income families. Thirty-two elementary schools serving the poorest and lowest achieving students in the district were randomly assigned to the treatment condition, to participate in the CFC program and receive a CFC-trained coach, or the comparison condition to continue with the professional development resources, including literacy coaching, that were already present in schools.² Prior to the beginning of the CFC intervention, one treatment and two comparison schools left the study, resulting in 29 schools (15 treatment and 14 comparison schools).

The study is conducted over a 3-year period to allow time for the intervention to potentially influence the quality of teachers' reading comprehension instruction and students' reading achievement. Coaches and principals are surveyed and interviewed once a year to assess their perception of the CFC program, its utility for improving learning conditions at their school, and the factors that supported and hindered coaches' work with teachers. Teachers complete surveys at baseline and again at the end of each study year to measure their level of participation in coaching, perception of the usefulness of coaching for influencing their practice, perception of their school community, and

quality of their instructional practice. Teachers also are observed leading a text discussion twice a year and submit samples of their assignments with student work in order to assess change in the quality of their instruction. Students' reading achievement is measured using the Degrees of Reading Power assessment administered twice a year and by their scores on the state's accountability test.

Here, we report on analyses based on data from the 1st year of the study when the CFC program was introduced in schools. Teacher surveys and coach interviews in the treatment (CFC) and comparison schools are used to describe teachers' participation in and attitude toward the coaching they received, perception of the school environment, and coaches' perceptions of how the school environment influenced their work with teachers.

Participants

Coaches. As shown in Supplemental Table S1, CFC coaches ($n = 11$) and all but two of the eligible literacy coaches in the comparison schools (i.e., who were not Reading First coaches and who worked with fourth- and fifth-grade teachers, $n = 9$) participated in the study. Coaches in the CFC and comparison schools described similar backgrounds at the beginning of the study. Both groups reported teaching an average of 13 years (ranging from 4 to 32 years) and working as literacy coaches for an average of 3 years (ranging from 1 to 10 years), and more than half of the CFC and comparison coaches (60%) held a postgraduate degree.

Teachers. The large majority (95%) of the eligible fourth- and fifth-grade teachers agreed to participate in the study ($N = 193$). On entry to the study, teachers in the intervention and comparison schools did not differ on demographic characteristics. Teachers had an average of 8 years of experience teaching reading (range from no years to 32 years). Approximately half of the teachers (45%) reported up to 3 years of teaching experience and could be considered novice teachers.

English is the language of instruction for the majority of teachers (65%). The remaining teachers taught in both English and Spanish. Nearly a third (30%) of the teachers held a

master's degree; 7% had temporary, provisional, or emergency certification. At the end of the year, 177 teachers remained in the study (92%). The primary reasons for teacher attrition from the study were maternity leave, leave of absence for personal reasons, and departmentalization (i.e., the teacher no longer taught reading). Only two teachers, both from comparison schools, left the study because they did not want to participate in the research activities. Compared to teachers who remained in the study, those who left differed significantly on only one of the above measures; they reported less experience teaching reading (4 years compared to 8 years of experience teaching reading). Within the group of teachers remaining in the study, comparison and intervention teachers did not differ on years teaching reading.

For the analyses in this study that focus on change over 1 year in teachers' experiences and perceptions of coaching, we included only those teachers who responded to surveys at both baseline and the end of the first study year. The final sample size is 96 teachers with 63 teachers in CFC schools and 33 teachers in comparison schools. No differences were found between the 96 teachers included in the following analyses and the remaining teachers on any demographic characteristics.

Procedures and Measures

Teacher surveys. Teachers completed surveys in the fall prior to the assignment of CFC-trained coaches to the treatment schools and again at the end of the academic year. As shown in Supplemental Table S2, both the baseline and end-of-year surveys obtained teachers' self-reported information about their prior education and teaching experience and the frequency of their participation in other district-sponsored professional development outside of coaching. Teachers also described at baseline their coaching experience in the year prior to the study and their experience during the study year. Specifically, teachers described the frequency with which they participated in different literacy coaching activities, the content emphasized in the coaching activities, and usefulness of their participation in coaching for improving their instruction. The surveys also obtained teachers'

perceptions of their principals' leadership style and professional norms at their school.

The frequency of teachers' participation in different literacy coaching activities was assessed on five items (coded 1 = *never*, 2 = *one to three times a year*, 3 = *four to six times a year*, 4 = *monthly*, and 5 = *weekly*):

- Coach met with me and other teachers in grade-level meetings.
- Coach met with me individually.
- Coach observed me teaching for at least 30 minutes.
- Coach taught a model lesson for me.
- Coach taught a lesson with me in my classroom.

Teachers indicated the usefulness of each of these activities (coded 0 = *not applicable*, 1 = *not useful* to 4 = *very useful*). Two averages were created from these sets of items: (a) the overall frequency of teachers' participation in coaching, and (b) teachers' perception of the usefulness of the coaching activities for improving their instructional practice.

The content emphasized in the coaching activities was assessed on 26 items (coded 1 = *no emphasis* to 4 = *major emphasis*). Averages measured five content areas that CFC coaches were intended to emphasize in their coaching activities:

- Building knowledge of the theory underlying effective pedagogy (e.g., coaches study education research with teachers).
- Planning and reflecting on instruction (e.g., coaches help teachers plan rigorous instruction, reflect on their instruction after a lesson, create assignments for students, study student work with teachers, study assessment data with teachers, and work with teachers to better anticipate student difficulties or misconceptions).
- Providing help during lesson enactment (e.g., coaches help teachers facilitate better classroom discussions and teach new instructional strategies).
- Differentiating instruction (e.g., coaches help teachers plan lessons

tailored to specific student learning needs).

- Building a learning community (e.g., coaches support teacher collaboration and planning and reflecting on student work together).

The first four content areas were measured in fall 2006 and spring 2007; new items measuring the emphasis of the coaching on building a learning community were added in spring 2007.

Teachers indicated the extent to which they agreed (1 = *strongly disagree* to 4 = *strongly agree*) with statements about their principal's leadership. Two averages were created to describe principal leadership: (a) principal actively participates in literacy reform (e.g., the principal articulates and promotes a vision of rigorous literacy instruction, principal finds ways to deepen teachers' literacy knowledge, principal follows up on group professional learning to see how it is being used by teachers at a grade level or in individual classrooms); and (b) principal publicly commends teachers who work together to advance their learning and their students' learning, and so on, and principal shares leadership (e.g., encourages teachers to take leadership roles, encourages coaches to take leadership roles).

Teachers also described the extent to which they agreed (1 = *strongly disagree* to 4 = *strongly agree*) with statements about the norms of the professional community at their school. Two averages measured teachers' perceptions of their school's professional community: (a) teachers respect and care for each other (e.g., teachers at my school respect colleagues who are expert at their craft, trust each other, make new teachers feel welcome); and (b) teachers collaborate to improve instruction (e.g., regularly discuss teaching and learning, share instructional materials and lesson plans).

Coach interviews. Coaches were interviewed in early spring prior to when the teacher surveys were administered. The interviews were conducted by a member of the research team who had considerable interviewing experience. Interviews were scheduled at a time that was convenient for the coaches and at a place chosen by the coach. The length of the interviews ranged from 1 to 3 hours depending on the responder. Four of the 11 CFC

coaches were each assigned to two different schools, and they were asked separately about the program at each school. The coach interview protocol was developed by the research team and included 12 primary questions with related follow-up questions focused on coaches' experience working with teachers and principals and the factors at their school that supported or impeded their work. The primary questions include the following:

- How would you describe your role as a literacy coach at your school?
- Do you feel like you are part of the community at your school?
- How did teachers react to you when you started working with them?
- Are any teachers reluctant to work with you? Why?
- How frequently do you work with teachers in grade-level teams and individually in their classrooms?
- What is the focus of your work with teachers?
- Have you seen any changes in teachers' practice as a result of your work?
- How actively involved is your principal in the CFC program?
- What did your principal do to establish your role at the school?
- What specific actions has your principal taken to support your work?
- What is the most supportive step your principal has taken to assist you in your work?
- What, if anything, could your principal do to be more supportive of your work with teachers?

Transcripts of the interviews were coded by a single researcher. A second researcher coded a third of the interviews to check the reliability of the codes (see Supplemental Table S3). The level of agreement between researchers was 80% for codes describing principal leadership and level of support for the CFC program, 100% for codes describing the coach's role in team meetings, 89% for codes describing teacher resistance, and 82% for codes describing veteran versus more experienced teachers' coaching participation.

Analyses

One-way and repeated-measures analyses of variance (ANOVAs) were used to identify and compare CFC and comparison teachers on group differences within time and patterns of change over time from baseline in fall 2006 and again in spring 2007 in reports of their participation in coaching activities and the content emphasized in coaching activities. One-way ANOVAs were used to compare CFC and comparison teacher perceptions of the usefulness of coaching for improving their instructional practice at the end of the 1st year of the CFC program in spring 2007. Frequencies were computed to describe variation in teachers' reports of their participation in specific coaching activities.

Separate regression analyses were used to estimate the relative effects of the features of the school context described by teachers on two dependent variables: (a) the overall frequency of teachers' participation in coaching, and (b) teachers' perceptions of the usefulness of the coaching they received for improving their practice. Separate regression analyses also were conducted on the extent to which five content areas were emphasized in the coaching activities: (a) planning and reflecting on instruction, (b) providing help during lesson enactment, (c) building knowledge of the theory underlying effective pedagogy, (d) differentiating instruction, and (e) building a learning community. The dependent variables were measured at the end of the school year.

The independent variables included in each of the regression models measured key features of the school environment measured at baseline in fall 2006: (a) principal is an active participant in literacy reform, (b) principal shares leadership, (c) teachers collaborate to improve instruction, (d) teachers respect and care for each other, (e) school participation in the CFC program, (f) teacher years teaching reading, (g) frequency of teacher participation in other district-sponsored professional development besides coaching, and (h) coach years of experience coaching teachers.

Coach interviews were transcribed and analyzed using QSR N6, the sixth version of the Non-numerical Unstructured Data Indexing Searching and Theorizing (NUD*IST). Released by QSR International in 2002, QSR N6 is a qualitative

research toolkit for coding and analyzing text documents. In this study, we analyzed only the CFC coach interviews to increase our understanding of how aspects of the school environment supported or limited the implementation of a coaching program that was newly introduced in all of the schools in the CFC sample. Three types of coding procedures were employed to analyze the interviews (Strauss & Corbin, 1990). First, a process of open coding was used to identify the major ideas contained within each response from each coach to each question. An inductive process then was used to assign labels or codes to the different ideas. Second, a process of axial coding was used in which individual codes and associated text passages were reexamined and compared, and codes were refined or combined as appropriate to characterize a particular action or idea. Matrices organized by teachers' survey responses displayed codes pertaining to different social resources in the school environment and their participation in specific coaching activities aggregated at the school level. To detect patterns in the data, schools were rank-ordered based on their scores from the teacher survey and were compared to codes derived from the coach interviews

Results

Results are presented in the following sections organized by each research question.

What is the influence of the CFC program on teachers' experience of literacy coaching?

Frequency of teacher participation in coaching. As shown in Supplemental Table S4, teachers in the CFC schools significantly ($p < .001$) increased their overall participation in coaching from the previous year prior to the onset of the CFC program, whereas comparison teachers maintained the same level of participation in coaching. Three individual activities exhibited this same pattern: teachers being observed by a coach in their classrooms for at least 30 minutes, teachers having a coach model a lesson in their classrooms, and teachers co-teaching a lesson with a coach. Teachers in both the CFC and comparison schools increased their participation in meeting with a coach individually and in grade-level meetings.

Supplemental Table S5 shows that even though teachers in the CFC schools significantly increased the frequency of their participation in literacy coaching, a relatively small percentage of teachers reported meeting with their coaches at the full level of implementation prescribed by the developers of the CFC program: weekly meetings with coaches in grade-level teams and individual meetings, lesson observations, modeling and co-teaching on a monthly basis. Moreover, teachers in both the CFC and comparison schools varied considerably in their participation in coaching. For both groups, the most frequent weekly activity was meeting with a coach in grade-level teams, whereas the least frequent was co-teaching a lesson with the coach. Thirty-seven percent of the teachers in the CFC schools met with their coaches in weekly grade-level team meetings compared to 21% of the comparison teachers. Only 13% of the teachers reported meeting individually with their coaches on a weekly basis, compared to 15% of the teachers in the comparison schools.

Content emphasized in the coaching activities. As described earlier, teachers rated the degree to which the literacy coaching activities in which they participated emphasized (a) planning and reflecting on instruction, (b) providing help during lesson enactment, (c) building theory underlying pedagogy, (d) building a learning community, and (e) differentiating instruction.

As shown in Supplemental Table S6, results indicated significantly ($p < .05$) different patterns of change in the content emphasized in the coaching activities experienced by teachers in the CFC and comparison schools. Teachers in the CFC schools reported significantly greater emphasis over time and in spring 2007 than comparison teachers on planning and instruction ($p < .05$; see Supplemental Figure S1), help during lesson enactment ($p < .05$; see Supplemental Figure S2), and building knowledge of the theory behind effective reading comprehension instruction ($p < .05$; see Supplemental Figure S3). CFC teachers also reported in the spring that their coaches emphasized building a learning community significantly ($p < .05$) more than the comparison group coaches. The one exception to the general trend was the emphasis that coaches placed on helping teachers differentiate instruction for students. Teachers in

both the CFC and comparison schools similarly reported a significant increase in the amount of emphasis that this content received in their interactions with coaches. Differentiating instruction was a significant focus of the district's overall professional development plan during data collection in 2006–2007, which may explain similarities in reports of teachers in the comparison and CFC schools.

Perceived usefulness of literacy coaching. Teachers also described the usefulness of participating in the literacy coaching activities over the past year for improving their reading comprehension instruction in the spring. Teachers in the CFC schools were more positive that being observed by a coach and having a coach model lessons in their classrooms were useful activities for improving their practice ($p < .05$ and $p < .001$, respectively; see Supplemental Table S7). No other difference between groups was detected for teachers' perceived usefulness of coaching activities.

How do different contextual features of the school environment influence the implementation of the CFC program?

Regression analyses identified the contextual features of the school environment, including a school's social resources (i.e., principal leadership and norms for the professional community) and teacher and coach characteristics that predict variation in the implementation of literacy coaching as measured by the overall extent of coaching experienced by teachers, the content of the interactions between teachers and coaches, and teachers' perception of its usefulness for improving their practice.

As shown in Supplemental Table S8, the analyses explained significant proportions of the variance in the overall extent of teachers' participation in the coaching activities (24%, $p < .05$). The CFC program, a school's social resources, and teacher experience significantly predicted the extent of teachers' participation in coaching. Teachers tended to participate more actively in coaching if they were less experienced, if they taught at a school where they perceived their principal as sharing leadership, and if their school participated in the CFC program.

Analyses also explained significant proportions of variance in the content of the interactions

between teachers and coaches, with the exception of coaches working with teachers to differentiate instruction (see Supplemental Table S9): planning and reflecting on instruction (22%, $p < .01$), help during lesson enactment (23%, $p < .01$), building theory (22%, $p < .01$), and building a learning community (16%, $p < .05$). In addition to the CFC program, teachers' participation in coaching activities that emphasized planning and reflecting on instruction was positively predicted by principals' willingness to share leadership and teachers' participation in other district-sponsored professional development besides coaching, but negatively predicted by a strong pre-existing culture of teacher collaboration. Similarly, teachers were more likely to receive help during lesson enactment by their coaches in schools where the principal was perceived as being willing to share leadership, where teachers did not have a strong culture of collaboration, and where coaches had more years of experience. Coach experience also positively predicted teachers' participation in coaching that emphasized building a school's learning community. The extent to which the coaching received by teachers focused on building theory underlying effective reading pedagogy, in contrast, was predicted only by a school's participation in the CFC program.

Finally, as presented in Supplemental Table S10, participation in the CFC program positively and significantly predicted teachers' perception of coaching as being useful for improving their practice (27%, $p < .01$). Principal sharing leadership, one of the pre-existing social resources in a school, also positively predicted the degree to which teachers perceived the usefulness of their coaching experiences. In contrast, teachers were less likely to perceive their coaching experiences as useful for improving their practice in schools with a pre-existing culture of teacher collaboration.

Summary of the Statistical Analyses

As the developers of the CFC program hoped, teachers in the schools participating in the CFC program reported increasing their participation in literacy coaching at the end of the 1st year beyond that of teachers in the comparison schools who experienced what is considered to be standard practice for literacy coaching in the district. Even though the CFC program was not fully imple-

mented at the intended level, teachers in the CFC schools engaged more frequently with teachers in their classrooms. Commensurate with the goals of the CFC program and instructional coaching programs in general, teachers in the CFC schools also reported that the coaching they received placed significantly greater focus on planning and enacting instruction, increasing their knowledge base, and establishing learning communities. These findings are important as they highlight success in gaining access to teachers' classrooms, a difficult task for many coaches to accomplish (Bean, 2004).

The time that teachers spent with coaches varied considerably even though they reported significantly greater participation overall in coaching in CFC schools. Anticipating variation in teachers' participation in coaching, we obtained baseline measures of the school environment to better understand the contextual factors in schools that influence the enactment of literacy coaching. Results of our analyses provide evidence that a school's social resources predicted the amount and type of coaching and perceived usefulness of coaching received by teachers apart from participation in the CFC program. Chief among these factors was principal leadership. Consistent with our hypotheses, principals played a critical role in facilitating more successful implementation of the CFC program. Principals who were willing to share leadership fostered teachers' greater participation in coaching and perceptions that the coaching they received helped improve their practice as well as stronger emphasis on planning and reflecting on instruction and lesson enactment in the coaching activities.

Also as expected, the experience levels of coaches and teachers were associated with participation in coaching and the content emphasized in coaching activities but in different ways. More experienced coaches tended to emphasize lesson enactment and creating learning communities in their activities. Teachers with less experience in teaching reading became more actively involved in the coaching program, whereas those with more recent experience participating in other district-sponsored professional development outside of coaching participated in activities with a stronger focus on planning and reflecting on instruction and differentiating instruction.

Contrary to our expectations, the extent to which principals were seen as playing an active role in supporting literacy reform at their school at the beginning of the year was unrelated to teachers' subsequent coaching participation. Teachers' respect and trust in one another similarly did not predict teachers' later coaching participation. Because the large majority of teachers described trusting relationships with their colleagues, the lack of variation might explain the insignificant association.

Unexpectedly, the established culture of teacher collaboration in a school emerged as a negative predictor of teachers' belief that coaching improved their practice and their participation in activities that emphasized planning and reflecting on instruction and enacting instruction. Initially, we expected that coaches would more easily establish themselves in schools where teachers previously collaborated on a regular basis to plan lessons and discuss instruction because coaches would be able to build on these routines in their work with teachers. Instead, we found that coaches appeared to face a more difficult challenge gaining a foothold with teachers and becoming part of their existing collaborative efforts in a number of these schools.

Results of the Qualitative Analyses

We turned to the CFC coach interviews to gain insight into the relationship between a school's social resources and teachers' coaching experiences and the processes by which these resources influence coaches' work with teachers when a coaching program is newly introduced to a school. We compared teachers' survey descriptions of their school environment aggregated at the school level to codes independently derived from analyses of the coach interviews. We focused attention on coaches' description of their principals' leadership and the ways in which principals hindered or supported their work with teachers. We also focused on coaches' descriptions of teachers' responses to their efforts and their success at engaging teachers in specific coaching activities.

Principal Leadership

Our results confirmed strong agreement between teachers' survey responses and CFC

coaches' interview descriptions. In five schools in the highest ranks of principals' willingness to share leadership, the coaches described their principal as exhibiting a horizontal or co-equal leadership style. Coaches reported that the principals in these schools granted teachers professional autonomy and treated teachers as partners in the process of implementing the CFC program. As one coach described,

[The teachers] do a lot outside of the [district's Instructional Planning Guides] and they do a lot of more independent things. . . . It's like the principal is really open about if you're teaching [the state standards] than you are doing what you are supposed to do.

In seven of the schools ranked lowest on their principals' willingness to share leadership, coaches described principals using a more vertical or top-down leadership style. These principals were described as not allowing teachers to deviate from mandated procedures. One coach described her principal, for example, as not being a "learner" with her teachers and as not permitting the teachers to deviate from mandated procedures prescribed by him or her. Although the principal was aware at times that his or her attitude made it difficult for the teachers, the principal also asserted that negotiation with the teachers was not possible because the school's achievement test scores "have to be better than they were last year," and he or she did not trust the teachers to accomplish this on their own.

We next examined coaches' interviews for insights into why principals' leadership style reflecting willingness to share leadership would influence teachers' coaching participation. Our analyses identified three mechanisms by which principals encouraged coaches' work with teachers:

1. Supporting and participating in the CFC program
2. Identifying the CFC coach as a resource for teachers
3. Allowing CFC coaches to manage their own schedules

On the other hand, the presence of a hostile and antagonistic relationship between principals and teachers negatively influenced CFC coaches'

work with teachers. Each of these mechanisms is described in depth in the following sections.

Supporting and participating in the CFC program. In five of the CFC schools ranked highest on principals' willingness to share leadership, the coaches reported that their principal introduced the CFC program to their teachers in a very positive light. They highlighted the skills and accomplishments of the CFC coach, commended the program when talking with teachers, and encouraged but did not mandate that teachers work with their coach. For example, in response to the question, "What specific actions has your principal taken to support your work with teachers?" one coach replied that her principal pointedly explained to teachers that the program would be beneficial to the school and emphasized her own role as a learner along with the coach and teachers. In the coach's words,

The day I came, [the principal] introduced me to the faculty. She told them that [CFC] was vital for us to change our way of thinking and that it was going to take some time, and that she was supportive. She understood that it was going to take time and that we would be very patient, but not to despair. They would get it and everybody is learning. She was learning, she was in the learner-student role, and I was in a learner-student role, and that the teachers were gonna be in the same role.

Nearly all of the principals who initially framed CFC in a positive light to their teachers also actively supported and participated in the CFC program. For example, these principals helped arrange time for the coach to model lessons in classrooms, arranged for the coach to lead professional development sessions for the faculty, attended meetings between coaches and teachers when invited, and talked with the coach about the best ways to approach resistant teachers.

Principals at seven CFC schools in the lowest ranks based on teacher descriptions of their willingness to share leadership made no attempt to introduce or explain the CFC program to their teachers ($n = 3$) or told teachers that working with their coach was mandatory ($n = 2$). Other coaches described their principal as actively portraying the CFC program in a negative light, such as explaining to teachers that their school's participation in CFC was a punishment for poor performance meted by the district ($n = 2$). It is

not surprising that under these circumstances, the principals were not seen by the coaches as being supportive of their efforts. As one coach explained,

CFC isn't the principal's agenda. It's happening at her school and she knows that if she tries to block it, she will get in trouble, but she is not going to pave the way for me. If the teachers are reluctant or resistant, she is not going to help.

None of the principals who received lower teacher descriptions of their willingness to share leadership actively supported the CFC program, and three of the principals remained completely uninvolved, refusing to help coaches with strongly resistant teachers and declining to attend the professional development meetings.

Identifying the CFC coach as a resource. Principals further encouraged CFC coaches' work by publicly identifying the coach as a resource for teachers. Coaches in six of the CFC schools with the highest teacher descriptions of principals' willingness to share leadership reported that their principal supported their work by speaking highly of them to teachers, referring teachers to the coach for questions concerning literacy instruction, and inviting the coach to serve on school committees. As one coach described,

[My principal] has included me in different meetings and asked for my opinion on certain things that go on in the school. She uses me as a resource, and so that's helped the other teachers kind of see me as a resource.

Allowing CFC coaches to manage their own schedule. A principal's willingness to grant autonomy to CFC coaches was a third strategy to help coaches engage teachers in the CFC program. In response to the questions, "What specific actions has your principal taken to support your work?" and "What was the most supportive step taken by your principal to assist you?" three coaches whose principals received high descriptions of their willingness to share leadership reported that their principal allowed them to manage their own schedule and activities. This likely allowed CFC coaches to focus more on the activities that were part of the CFC program

(e.g., planning with teachers, modeling lessons in teachers' classrooms) than on activities that are often required of literacy coaches (e.g., administering assessments to students, conducting administrative tasks, accompanying students on field trips, etc.) but that are not part of the CFC program's vision of coaching.

Developing a negative relationship with teachers. A principal's relationship with teachers surfaced as a key factor in the CFC coach interviews that influenced their work with teachers. Teachers tended to participate less in CFC coaching in schools with a pre-existing negative relationship between teachers and principals. Coaches described antagonistic relationships between their principals and teachers in three schools with the lowest rankings for principals' willingness to share leadership. In these schools, coaches reported that teachers initially resisted working with them because they saw the coach as being "aligned with their principal." One coach described the relationship between the teachers and the principal at her school as being "a constant battle" because the teachers were frustrated and overwhelmed by the many tasks required of them by the principal. The teachers perceived the CFC program as "one more thing on their plate" and, as a result, "lash(ed) out at the principal" by refusing to participate.

Professional Experience of Teachers and Coaches

Our analyses identified several reasons that teachers' and coaches' relative level of experience influenced teachers' coaching participation and the content emphasized in coaching activities. These reasons are explored in the following sections.

Teachers' professional experience. Commensurate with the results of the statistical analyses, the majority of CFC coaches ($n = 10$) characterized novice teachers as more open to coaching than experienced, veteran teachers. In six schools, coaches reported that they encountered substantially greater resistance from veteran teachers than novice teachers. The primary reason offered was that veteran teachers believed "they [didn't] need anybody to help them" and

doubted that they had anything new to learn from a coach.

Some coaches ($n = 5$) thought that several of the more veteran teachers became discouraged with professional development programs because they believed the CFC program was the latest in a long line of reform initiatives that would disappear eventually. For example, in describing her experience working with a particularly resistant teacher, one coach stated,

I think she probably resents me. . . . I'm just another [person] coming into her school, trying to save her school, and she's probably seen my kind so many times she's sick of us. So I don't expect her to be my best buddy anytime soon, but we'll see.

On the other hand, coaches generally described the majority of new teachers as enthusiastic participants in coaching, welcoming them into their classrooms and identifying the coach as a source of greatly needed help and support. As one coach explained, "New teachers are really positive and appreciative of getting extra support." Moreover, coaches also reported that novice teachers were more willing to experiment with new teaching strategies than were veteran teachers. As another coach described, "My brand new teachers have really taken everything I've worked with them on and they use [these techniques] in their classroom."

Coach experience with literacy coaching. The relationship between coaches' level of experience and the content of their work with teachers is less clear, primarily because coaches' experience level is confounded with the number of years they had served as literacy coaches *at their school*. We believe that coaches' relative level of experience at their school contributes to differences in the content emphasized in coaching activities because of established relationships between coaches and teachers. Two of the most experienced coaches worked as literacy coaches at their school prior to joining the CFC program and maintained long-standing positive relationships with the teachers in their school. Building on their established relationship with teachers likely allowed the more experienced coaches to quickly engage with their teachers in activities that emphasized lesson enactment, a more personally threatening activity than

planning lessons or studying the theory underlying effective pedagogy (Bean, 2004). An established relationship with teachers likely also facilitated coaches' work focused on creating learning communities within a school. Coaches already accepted by their teachers could devote less time and energy toward establishing one-on-one connections and more time to building relationships among a community of teachers in their school. All of the less experienced coaches, in contrast, were new to their school and reported expending considerable energy in the 1st year of the program establishing trust with teachers and demonstrating their pedagogical expertise, especially to more veteran teachers.

Pre-Existing Culture of Teacher Collaboration Within a School

Although we expected the collaborative culture among teachers to be a key contextual factor in schools acting upon implementation of the CFC program, we did not expect the relationship to be negative. The teacher reports proved us wrong. We relied on the coach interviews to explain this pattern.

Because the regression analyses identified similar magnitudes of association between teacher collaboration and both participation in and perceived usefulness of coaching activities ($\beta = .27$ and $\beta = .28$, respectively) and because these two measures are strongly correlated ($r = .77$), we reviewed the CFC coaches' responses to questions focused on engaging teachers in specific coaching activities. We followed the same analysis plan described in the previous sections, comparing codes from rankings of teacher collaboration with coaches' descriptions of teacher participation.

Consistent with findings from the teacher surveys, the coach interviews described a generally negative relationship between the existing culture of teacher collaboration and teachers' coaching participation in the majority of schools ($n = 10$). However, coaches also described a contrary pattern in four schools, which helps explain why the magnitudes of the negative relationships in the regression analyses were not stronger. Coaches in schools with descriptions of strong teachers' professional collaboration identified two main reasons for teachers' relatively low

participation in coaching at their school: (a) The teacher culture was actively organized against coaching ($n = 2$), and (b) the shared vision of teachers' instructional priorities within a school was not aligned with the instructional vision promoted by the CFC coaches ($n = 3$).

Teachers in the school with the strongest pre-existing culture of teacher collaboration, for example, had a long history of working together and they actively opposed the advances of their CFC coach. The coach described these teachers as creating a school culture that was explicitly organized against coaching. As she explained,

They don't like coaches at this campus, so the longest a coach has been here is for 2 years and then they're out; they're gone. . . . It's just been the norm. You know how cultures establish their norms. So that norms have been that, "We don't like them, and we want them out." Especially coming in as a new person. Nobody knew my work. Nobody knew what I've done with children.

Another coach described a similar dynamic with the fifth-grade teachers at her school who decided as a team not to work with her.

A second reason that teachers in schools with a strong pre-existing culture of collaboration participated at low levels in coaching concerns a mismatch between teachers' instructional priorities and the instructional goals of the CFC program. Two schools required teachers to devote a substantial part of the academic year from January to April toward instructing students on the format and content of the state's accountability test. During these months, coaches encountered difficulties engaging teachers because their test-preparation instructional strategies—teaching students to skim a text to identify answers to multiple-choice questions—did not align with *Questioning the Author* techniques promoted by the CFC coaches. Teachers reportedly did not see their work with coaches as being relevant to the immediate instructional needs of their students during these months. This mismatch between the goals for instruction that were shared across teachers in a school and the vision of instruction promoted by a coach clarifies the negative relationship between the strength of the pre-existing culture of collaboration and teachers' engagement in, and attitude toward, the CFC coaching.

A similar dynamic appeared in a third school yet for a different reason. The teachers in this

school contended with high levels of student and community violence. As a result, managing students' behavioral problems became the key instructional priority for teachers. As the coach explained, "The stuff you see [here] is really different from the stuff you see in any other school." The coach further explained that at least some teachers in this school wanted to teach more interactively but worried that doing so would open the door to students antagonizing and fighting with one another—a frequent occurrence during class time. Several teachers thus questioned the relevance of *Questioning the Author* strategies for improving their day-to-day classroom work. In light of their concerns, it is not unexpected that teachers would participate less in such coaching activities as planning for and enacting instruction based on *Questioning the Author* or believe that the coaching they received was useful to them for improving their instruction.

Conversely, we found that teachers in a school who reported lacking a sense of community participated in the CFC program as a means of alleviating their professional isolation. Coaches identified this reason for teachers in four schools expressing strong interest in participating in coaching activities. For example, one coach described the teachers in her school as not "gel[ling] together as a team" because of conflicting personalities and different backgrounds. In her words,

There's not a sense of community [here]. A lot of times [the teachers] are put in teams and they are assigned together, but I think there is resentment about them being assigned together. It's not natural. It's kind of the same for lunch. It's like, "Why would I want to go sit in [the lounge]? I don't know anybody. I don't want to talk with them."

In response to the negative social climate in their school, the coach reported that these teachers believed coaching would provide an opportunity to establish a positive collegial relationship within the school, even going so far as to request time from their weekly staff meetings to engage in individual coaching sessions.

Another school departmentalized leaving only one fifth-grade reading teacher. The coach described this teacher as isolated and eager to engage in coaching, partly because "it gave her somebody to talk to."

Teachers' isolation in a school also may contribute to teachers' willingness to participate in specific coaching activities that emphasize planning and reflecting on instruction and enacting instruction. Ideally, planning instruction is a process that is taken up by teachers who share their expertise and coordinate their efforts within a grade or department. In schools with a weak culture of teacher collaboration, working with a coach can provide teachers with an opportunity to connect with another professional around the tasks of instruction that is otherwise not available.

Summary of the Qualitative Analyses

Interviews with the CFC coaches provided descriptions of the school context similar to those of teachers and helped explain how the social resources in a school functioned to help or hinder implementation of the CFC coaching program. The findings of the qualitative analyses shed light on the critical role that principals play in supporting their coaches' ability to engage teachers. As one coach described,

You take the principals to the [CFC] trainings, but honestly, it still comes down to if the principal doesn't really want the coach to do these things, doesn't value the coach doing these things, isn't leading the way so the coach can follow, it just isn't going to happen.

Principals promoted coaches' work by favorably introducing the CFC program, participating in the program themselves, continually identifying the coach as a key resource for teachers, and allowing coaches to schedule their own time to work with teachers. Principals also hampered coaches' work with teachers when they engaged in a negative, antagonistic relationship with teachers. In these schools, coaches needed to assure teachers that they were trustworthy and an agent independent of the principal.

The interviews also clarified the effect of teachers' and coaches' professional experience on implementation. Coaches more easily engaged teachers in the CFC program who were new to the school than the more veteran teachers. Coaches explained that the new teachers were more appreciative and welcoming of the

support offered by their coach and more open to implementing new teaching strategies in their classrooms. The influence of coaches' experience on teachers' coaching experience is less clear. We think that coaches' prior experience at their school rather than experience coaching in general may explain the differences in the content emphasized in the coaching activities.

Evidence from the coach interviews added insight into the negative relationships between a school's existing collaborative culture and teachers' participation in and perception of the CFC program. In many schools that developed a strong collaborative culture, we found evidence of teams of teachers actively rejecting their coach. We also found that teachers in schools with strong collaborative cultures less often engaged in coaching when the instructional priorities shared across teachers in a school were not aligned with the instructional goals of the CFC program. Under these circumstances, teachers did not perceive coaching as relevant to them for improving their practice nor actively engaged in coaching, particularly activities aimed at planning and reflecting on instruction or enacting lessons with the coach. Conversely, teachers experiencing little collegial collaboration were described as more motivated to plan lessons with coaches and to welcome coaches into their classrooms as a way to alleviate their professional isolation.

Discussion

Literacy coaching is now widely endorsed and adopted in this country as a strategy for improving instruction and learning, but to date, the complexity of implementing such programs is little understood. Our study provides insight into how contextual factors within a school function together to promote or hinder the initial implementation of a coaching program and evidence that an innovative, structured coaching program can positively influence teachers' coaching experiences.

The results from our study highlight the critical role that principal leadership plays in implementing coaching programs. By actively participating in the program, endorsing the program to teachers, and supporting the coach's autonomy, principals signaled that change was necessary for

improvement, attainable, and in line with the school's current instructional goals—factors important in the early stages of program implementation (see Fixsen, Naoom, Blase, Friedman, & Wallace, 2005, for review of implementation research). Our results indicate that teachers more actively participated in the program if their principal demonstrated a more horizontal leadership style and previously established a positive relationship with teachers. Conversely, an established negative relationship with teachers appeared to foster their resistance to changing their practice through engaging in coaching activities.

Motivation for change at the individual teacher level could be further encouraged by the professional experience and needs of teachers, another main finding in our study. Theories of life cycle development (Burke et al., 1984; Steffy & Wolfe, 1998) describe varying stages of teachers' professional career development. Consistent with these theories, our evidence characterizes novice teachers as more receptive to professional learning opportunities than veteran teachers. Participating in the CFC program offered them opportunities to acquire proficiencies as teachers and to build ties with other teacher colleagues who offered support and guidance—an especially appealing opportunity for less experienced teachers who might feel isolated in a new school. On the other hand, not believing that the program would be useful and advantageous for their students, a more common perception of some of the more experienced teachers in the program, discouraged teachers from participating.

Although establishing a culture of teacher collaboration is the goal of many reform efforts, little research has investigated the ways in which these existing cultures influence the implementation of instructional reforms. Through our interviews with the CFC coaches, we gained insights into our finding that a strong collaborative school culture posed obstacles to implementing the coaching program and, conversely, that a weak culture of teacher collaboration facilitated teachers' participation. This finding is commensurate with other research indicating that existing communities of teachers can sometimes organize themselves in opposition to instructional reform (Gallucci, 2003;

Stoelinga, 2008). Moreover, in some schools without an existing culture of collaboration and a supporting network of resources, teachers instead appeared to turn to coaching as a way to alleviate their isolation in schools.

Schools with a strong collaborative community presented other difficulties for the CFC program, especially when the goals of instruction shared across teachers were in conflict with the goals of instruction promoted by the CFC program. One of the guiding principles of the CFC program is that coaching should be grounded in specific curricula content and that a focused approach to coach training and work with teachers in specific grade levels is necessary for moving beyond surface-level or partial adoptions of new instructional strategies. Teachers and administrators in urban schools face a multiplicity of student learning needs, however. Students who struggle with reading comprehension likely also struggle with writing, and students who are failing the state accountability test in reading likely are also not doing well in mathematics. Our results suggest that multiple and conflicting goals for instruction can greatly undermine coaches' work with teachers and emphasize the importance of coherence between the instructional vision promoted by a coaching program and the instructional vision promoted by other reform efforts in a school.

A limitation of our study is that our investigation included a relatively small sample of schools. Additional research in larger numbers of schools is needed to better untangle the complex relationship between existing social resources in a school and teachers' participation in a coaching program in its early stages of implementation. Our study left unanswered the question of how different types of coach experience (experience coaching or prior experience at a school) might influence teachers' coaching participation. Significant questions remain concerning the ways in which the existing teacher community influences teachers' coaching experiences. Although we found a negative relationship between these two factors, we identified cases in our qualitative analyses that presented a contrary pattern. Further investigation is needed to gain a more specific understanding of the factors that shape the existing community of

teachers' response to a new coach, as well as the factors that shape the development of these communities. We believe continued research in this area would increase the potential of coaching programs to positively affect teaching and learning and would contribute to our understanding of the implementation of educational reforms more broadly.

Research also is needed that focuses explicitly on the relationship between district leadership and the implementation of coaching programs. Our study was unable to assess the specific influence that district leaders—through their oversight of principals—might have exerted on the school-level implementation of the CFC program. Although not available in the initial year of this study, anecdotal reports from participants in subsequent years of our study suggest that district leadership determined the degree to which certain principals felt supported to implement CFC.

Finally, research is needed that explores the potential effect of the CFC program on the collaborative nature of the school environment. One of the goals of the CFC program is to help create the organizational conditions in schools that foster instructional improvement by encouraging principals to be a partner in their coaches' work with teachers and by supporting coaches to help engender more productive teacher collaboration by building a learning community within the school. The large majority of coaches who were new to their school and in the early stages of establishing relationships with principals and teachers in the 1st year of the CFC program limited our exploration in this study of the effect of CFC on the school environment. Additional research is needed to understand the potential of the program to affect schools' social environments and build a learning community over time.

Implications for Coaching Programs and Policies

In the following sections, we explore the potential implications of our findings for improving the design and implementation of instructional coaching programs and policies.

Creating a learning community for coaches. Opportunities for coaches to develop their

expertise are typically scarce in districts. Evidence from our study indicates that adopting a structured coaching program such as CFC that provides ongoing opportunities for coaches' knowledge and skill development can effectively support teachers' engagement in coaching. Opening coaches' work to the larger district community provides an opportunity for coaches' work to be defined beyond the immediate interests of their principals who traditionally supervise coaches' and determine their day-to-day responsibilities. Such a strategy would hold principals and coaches accountable for allocating most of the coach time toward working with teachers in their classrooms.

Engaging school and district leaders. Our results suggest that principal support is central to the successful implementation of coaching programs. In both overt and subtle ways, principals signal to teachers their support of or opposition to coaches, and these signals in turn appear to influence teachers' coaching experiences (see also Matsumura, Sartoris, Bickel & Garnier, 2009). Based on these findings, we recommend that coaching programs follow the CFC example of including principals and district leaders as partners in coaches' work so that they can establish a shared vision of good literacy coaching and instruction and learn effective ways to support their coaches' work with teachers.

Assessing readiness for change. Assessing the readiness of a community to adopt an innovation is a common practice in the social sciences (see Fixsen et al., 2005). We suggest that such a strategy in education communities could bolster more effective implementation of coaching programs in the early stages. The literature on assessing a community's readiness for change emphasizes the need to (a) gain unambiguous buy-in from stakeholders, (b) ensure that organizational structures are in place to support the innovation, and (c) clarify how an innovation fits within a community's larger "agenda" or priorities for change. In assessing readiness for a coaching program, our study underscores the importance of principal "buy-in" to this effort. Other research similarly stresses the importance of principals' and district leaders' support of new programs and willingness to use their administrative powers to support and

pressure teachers and principals respectively to take up new practices (Huberman, 1983; Miles, 1983). Attending to key stakeholders could help ensure that (a) coaches do not waste a significant portion of their time convincing teachers that their work with them is a school priority and (b) principals are also held accountable for program implementation through their supervisor's oversight. Assessing teacher leaders' buy-in to a program could provide important information about the likelihood that a new program would be implemented as intended, although more research is needed to understand the extent to which this might be the case.

We further advocate consideration of certain organizational structures when assessing a school's or district's readiness to adopt a coaching innovation. These could include, but are not limited to, existing structures in schools that teachers could use to meet with coaches (e.g., grade-level team meetings) or release from other professional obligations to participate in coaching. Teachers often communicate that they are too busy to participate in coaching. Taking steps to ensure that the program is not "one more thing" added to their schedules likely would help support more effective implementation.

Tailoring programs for teachers at different phases of their careers. Because new teachers might be more receptive to coaching and to experimenting with new instructional strategies as we found in our study, targeting coaching resources toward schools with high concentrations of new teachers could be especially effective for improving teaching and learning. Such a strategy could more rapidly bring teachers up to speed, benefit their students, and support the professional growth that they would unlikely achieve on their own in the first 3 years of induction.

Veteran teachers need to be considered as well when allocating resources. All teachers need support at different phases of their professional careers. Given the uncertainty of more veteran teachers' attitude toward and participation in coaching that we found, we propose that schools initially obtain agreement from teachers indicating their willingness to participate in coaching before committing resources toward this endeavor. This proposition is in line with our earlier

recommendation of a “readiness” assessment process to determine if their environment would be well suited to a structured coaching program such as CFC. If districts are to be involved in creating ongoing learning opportunities for coaches, one potentially effective strategy could be for schools to apply for specially trained coaches—with teachers’ agreement a condition of applying. Coaches likely will always need to demonstrate their expertise to more veteran teachers or, as described by one coach in our study, establish “street credibility” with the more experienced teachers in a school. Planning for this need and obtaining in advance the cooperation of teachers who are key stakeholders might be more productive than simply placing coaches in schools where teachers and possibly principals are unwilling or uninterested in working with them.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

Financial Disclosure/Funding

The work described in the current article was supported by a Teacher Quality Grant from the Institute for Educational Sciences, R305W060027. We are appreciative of the support provided by IES. All errors of fact, omission, and/or interpretation are solely the responsibility of the authors.

Notes

¹Donna DiPrima Bickel, one of the developers of the CFC program, and Kathleen McCarthy Young.

²For ethical reasons, the district would not permit taking away existing resources in schools for supporting literacy instruction. Schools, therefore, who were assigned to the treatment and comparison conditions either received an “additional” resource (participation in the program) or continued with their existing professional development plan.

References

- Allington, R. L. (2006). President’s message: Reading specialists, reading teachers, reading coaches: A question of credentials. *Reading Today*, 23(4), 16–17.
- Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In G. Sykes & L. Darling-Hammond (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 3–32). San Francisco: Jossey-Bass.
- Bean, R. M. (2004, spring). Promoting effective literacy instruction: The challenge for literacy coaches. *The California Reader*, 37(3), 58–63.
- Beck, I. L., & McKeown, M. B. (2006). *Improving comprehension with questioning the author: A fresh and expanded view of a powerful approach*. New York: Scholastic.
- Beck, I. L., McKeown, M. G., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction*. New York: Guilford.
- Block, C. C., & Pressley, M. (2002). *Comprehension instruction: Research-based best practices*. New York: Guilford.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32–42.
- Bryk, A., & Schneider, B. (2002). *Trust in schools: A core resource for improvement* (Volume in the American Sociological Associations Rose Series). New York: Russell Sage Foundation.
- Burch, P., & Spillane, J. P. (2003). Elementary school leadership strategies and subject matter: Reforming mathematics and literacy instruction. *Elementary School Journal*, 103(5), 519–535.
- Burke, P. J., Fessler, F., & Christensen, J. (1984). *Teacher career stages: Implications for staff development*. Bloomington, IN: Phi Delta Kappa Educational Foundation.
- Camburn, E. M., Kimball, S. M., & Lowenhaupt, R. (2008). Going to scale with teacher leadership: Lessons learned from a districtwide literacy coach initiative. In M. M. Mangin & S. R. Stoelinga (Eds.), *Effective teacher leadership: Using research to inform and reform* (pp. 120–143). New York: Teachers College Press.
- Chval, K., Abell, S., Pareja, E., Musikul, K., & Ritzka, G. (2008). Science and mathematics teachers’ experiences, needs, and expectations regarding professional development. *Eurasia Journal of Mathematics, Science and Technology Education*, 4(1), 31–43.
- Coburn, C. E. (2001). Collective sense-making about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis*, 23(2), 145–170.
- Coburn, C. E., & Russell, J. L. (2008). District policy and teachers’ social networks. *Educational Evaluation and Policy Analysis*, 30(3), 203–235.

- Coburn, C. E., & Stein, M. K. (2006). Communities of practice theory and the role of teacher professional development community in policy implementation. In M. I. Honig (Ed.), *New directions in education policy implementation: Confronting complexity* (pp. 25–46). Albany: State University of New York Press.
- Collins, A., Brown, J. S., & Holum, A. (1991). Cognitive apprenticeship: Making thinking visible. *American Educator*, 6(11), 38–46.
- Costa, A., & Garmston, R. (2002). *Cognitive coaching: A foundation for Renaissance schools*. Norwood, MA: Christopher-Gordon.
- Darling-Hammond, L. (2002). Research and rhetoric on teacher certification: A response to “Teacher Certification Reconsidered.” *Education Policy Analysis Archives*, 10(36). Retrieved October 19, 2009, from <http://epaa.asu.edu/epaa/v10n36.html>
- Duessen, T., Coskie, T., Robinson, L., & Autio, E. (2007). “Coach” can mean many things: Five categories of literacy coaches in Reading First (REL 2007-No. 005). Washington, DC: U.S. Department of Education.
- Ferguson, P., & Womack, S. T. (1993). The impact of subject matter and education coursework on teaching performance. *Journal of Teacher Education*, 44(1), 55–63.
- Fixsen, D. L., Naoom, S. L., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. Tampa: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network. (FMHI Publication No. 231)
- Frost, S., & Bean, R. M. (2006). *Qualifications for literacy coaches: Achieving the gold standard*. Retrieved September 9, 2008, from <https://www.literacycoachingonline.org>
- Gallucci, C. (2003). *Theorizing about responses to reform: The role of communities of practice in teacher learning*. Seattle: University of Washington, Center for the Study of Teaching and Policy.
- Gamse, B. C., Jacob, R. T., Horst, M., Boulay, B., & Unlu, F. (2008). *Reading First impact study final report* (NCEE 2009-4038). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- Garet, M. S., Cronen, S., Eaton, M., Kurki, A., Ludwig, M., Jones, W., . . . Szejnberg, L. (2008). *The impact of two professional development interventions on early reading instruction and achievement* (NCEE Report 2008-4031). Washington, DC: National Center for Educational Evaluation and Regional Assistance, Institute of Education Sciences.
- Garmston, R. (1987). How administrators support peer coaching. *Educational Leadership*, 44(2), 18–26.
- Goldhaber, D. D., & Brewer, D. J. (2000). Does teacher certification matter? High school certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22, 129–145.
- Hirsch, E. D., Jr. (2003). Reading comprehension requires knowledge—of words and the world. *American Educator*, 27(1), pp. 10–29, 48.
- Hirsch, E. D., Jr. (2006). Building knowledge: The case for bringing consent into the language arts block an for a knowledge-rich curriculum core for all children. *American Educator*, 30(1), 8–21, 28–29, 50–51.
- Huberman, A. M. (1983). School improvement strategies that work: Some scenarios. *Educational Leadership*, 21(3), pp. 23–27.
- Huberman, A. M. (1989). The professional life cycle of teachers. *Teachers College Record*, 91(1), 31–57.
- International Reading Association. (2004). *The role and qualifications of the reading coach in the United States: A position statement of the International Reading Association*. Newark, DE: Author.
- Leana, C., & Pil, F. K. (2006). Social capital and organizational performance: Evidence from urban public schools. *Organization Science*, 17(3), 353–366.
- Joyce, B., & Showers, B. (1996). The evolution of peer coaching. *Educational Leadership*, 53(6), 12–16.
- Louis, K. S., Marks, H. M., & Kruse, S. (1996). Teachers’ professional community in restructuring schools. *American Educational Research Journal*, 33(4), 757–798.
- Mangin, M. M. (2007). Facilitating elementary principals’ support for instructional teacher leadership. *Educational Administration Quarterly*, 43(3), 319–357.
- Mangin, M. M. (2008). The influence of organizational design on instructional teacher leadership. In M. M. Mangin & S. R. Stoelinga (Eds.), *Effective teacher leadership: Using research to inform and reform* (pp. 77–98). New York: Teachers College Press.
- Marsh, J. A., McCombs, J. S., Lockwood, J. R., Martorell, F., Gershwin, D., Naftel, S., . . . Crego, A. (2008). *Supporting literacy across the sunshine state: A study of Florida middle school reading coaches*. Santa Monica, CA: RAND Corporation.
- Matsumura, L. C., Garnier, H. E., Correnti, R., Bickel, D. D., & Junker, B. (In press). Investigating the effectiveness of a comprehensive literacy-coaching program in schools with high teacher mobility. *Elementary School Journal*.

- Matsumura, L. C., Sartoris, M., Bickel, D. D., & Garnier, H. E. (2009). Leadership for literacy coaching: The principal's role in launching a new coaching program. *Educational Administration Quarterly*, 45(50), 655–693.
- McLaughlin, M. W., & Talbert, J. (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement* (Series on School Reform). Chicago: University of Chicago Press.
- Miles, M. B. (1983, November). Unraveling the mysteries of institutionalization. *Educational Leadership*, 41(3) pp. 14–19.
- New Standards. (1999). *Reading and writing grade by grade: Primary literacy standards for kindergarten through third grade*. New York: Board of Education of the City of New York.
- Resnick, L. B. (1995). From aptitude to effort: A new foundation for our schools. *Daedalus*, 124(4), 55–62.
- Resnick, L. B., & Hall, M. W. (2001). *The principles of learning: Study tools for educators* [CD-ROM, version 2.0]. Available from www.instituteforlearning.org
- Rivera, N., Burley, K., & Sass, J. (2004, February). *Evaluation of school-based professional development (2002–03)* (Publication No. 187). Los Angeles: Los Angeles Unified School District, Planning, Assessment and Research Division.
- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Roller, C. (2006). *Reading and literacy coaches report on hiring requirements and duties survey*. Newark, DE: International Reading Association.
- Saunders, W., & Goldenberg, C. (2005). The contribution of settings to school improvement and school change: A case study. In C. O'Donnell & L. Yamauchi (Eds.), *Culture and context in human behavior change: Theory, research, and applications* (pp. 125–148). New York: Peter Lang.
- Schon, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Schon, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.
- Sinatra, G. M., Brown, K. J., & Reynolds, R. (2002). Implications of cognitive resource allocation for comprehension strategies instruction. In C. C. Block & M. Pressley (Eds.), *Comprehension instruction: Research-based best practices* (pp. 2–76). New York: Guilford.
- Smith, T. M., & Desimone, L. M. (2003). Do changes in patterns of participation in teachers' professional development reflect the goals of standards-based reform? *Educational Horizons*, 81(3), 119–129.
- Staub, F. C., & Bickel, D. D. (2003). *Developing Content-Focused CoachingSM in elementary literacy: A case study on designing for scale*. Paper presented at the biannual meeting of the European Association on Research and Instruction (EARLI), Padova, Italy.
- Staub, F. C., West, L., & Bickel, D. D. (2003). What is Content-Focused Coaching? In L. West & F. C. Staub (Eds.), *Content-Focused CoachingSM: Transforming mathematics lessons* (pp. 1–17). Portsmouth, NH/Pittsburgh, PA: Heinemann/University of Pittsburgh.
- Steffy, B. E., & Wolfe, M. P. (1998). *The life-cycle of the career teacher: Maintaining excellence for a lifetime* (LSS Publication Series No. 98-16). Retrieved October 19, 2009, from <http://www.temple.edu/lss/htmlpublications/publications/pubs98-16.htm>
- Stoelinga, S. R. (2008). Leading from above and below: Formal and informal teacher leadership. In M. M. Mangin & S. R. Stoelinga (Eds.), *Effective teacher leadership: Using research to inform and reform* (pp. 99–119). New York: Teachers College Press.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.
- Talbert, J., & McLaughlin, M. (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement*. New York: Teachers College Press.
- Taylor, J. E. (2008). Instructional coaching: The state of the art. In M. M. Mangin & S. R. Stoelinga (Eds.), *Effective teacher leadership: Using research to inform and reform* (pp. 10–35). New York: Teachers College Press.
- Walpole, S., & McKenna, M. C. (2004). *The literacy coach's handbook: A guide to research-based practices*. New York: Guilford.
- Wei, R. C., Darling-Hammond, L., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad*. Dallas, TX: National Staff Development Council.
- Willingham, D. T. (2006, spring). How knowledge helps: It speeds and strengthens reading comprehension, learning—and thinking. *American Educator*, pp. 30–37.

Authors

LINDSAY CLARE MATSUMURA is an assistant professor in learning sciences and policy at the University of Pittsburgh, 5808 WWPB, Pittsburgh, PA 15260; lcclare@pitt.edu. Her research focuses on teaching and learning in urban schools, the implementation of education reform initiatives, and developing assessments of teaching quality.

HELEN E. GARNIER is a consultant for the University of Pittsburgh's Learning Research and Development Center and the Center for Professional Development and the Biological Sciences Curriculum Studies, Colorado Springs. 5808 WWPB, University of

Pittsburgh, Pittsburgh, PA 15260 Previously, she was the chief analyst for the Third International Mathematics and Science Study and a senior research scientist for the LessonLab Research Institute of Pearson Education, Los Angeles. She specializes in research on effective teaching practices in longitudinal studies.

LAUREN B. RESNICK is a Distinguished University Professor of Psychology and Cognitive Science and of Learning Sciences and Education Policy at the University of Pittsburgh, 3939 O'Hara Street, Pittsburgh, PA 15260; resnick@pitt.edu. She has served as director of the Learning Research and Development Center and is founder and director of the Institute for Learning, both at the University of Pittsburgh.