Collaboration and self-regulation in teachers’ professional development

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Abstract

This paper describes a professional development model with promise for supporting meaningful shifts in practice. We begin by introducing the theoretical principles underlying our professional development model, with a focus on explicating the interface between collaborative inquiry in a learning community (Lave, 1991, In L.B. Resnick, J.M. Levine, S.D. Teasley (Eds.), Perspectives on Socially Shared Cognition, American Psychological Association, Washington, DC; Lave, & Wenger, 1991, Situated Learning: Legitimate Peripheral Participation, Cambridge University Press, Cambridge) and teachers’ self-regulated learning. Next, we report on successes and challenges within a 2-year collaborative research partnership. We recount how participating teachers reflected on practice, constructed conceptual knowledge about teaching, and made important instructional shifts. We also detail features of our model that teachers found most effective. We close by discussing our implications for theory and in-service professional development.

Keywords: Professional development; Inservice teacher education; Teacher collaboration; Self-regulated learning; Learning processes; Knowledge base for teaching; Professional practice; Reflective teaching; Instructional improvement; Intentional learning

1. Introduction

Teachers are often called upon to restructure their professional practices, across community and institutional, formal and informal, and pre-school, school-age, and post-secondary education (e.g., Borko, Mayfield, Marion, Flexer, & Cumbo, 1997; Boudah, Logan, & Greenwood, 2001; Pugach, 1999; Scott & Weeks, 1996; Stein, Schwan Smith, & Silver, 1999; Wesley & Buysse, 2001). On one hand, teachers are asked to revise practices to match shifts in societal structure, values, or resources, for example, to integrate emerging technologies into classrooms (Rennie, 2001) or to include students with disabilities in neighborhood schools (Vaughn & Schumm, 1995). On the other hand, teachers are expected to realign practices in light of evolving learning theories (e.g., behavioral, constructivist, sociocultural). Expectations are that teachers remain current with the professional literature and integrate research with practice (e.g., Bromme & Tillema, 1995; Simmons, Kuykendall,
Given this recurrent demand for change, it is not surprising that teacher educators call for professional development that is both on-going and dynamic (Fullan, 1995). But questions remain concerning how to conceptualize teacher learning and, correspondingly, about how to construct professional development so as to foster meaningful change (Collins, 1998; Stein & Brown, 1997).

In recent research on professional development, researchers are criticizing “traditional” approaches and advocating for newer, more collaborative models (Collins, 1998; Scott & Weeks, 1996; Simmons et al., 2000; Stein et al., 1999). Traditional models include one-stop workshops, with a top-down approach to disseminating knowledge, in which teachers are provided with information and resources that they are expected to translate into action (Gersten, Vaughn, Deshler, & Schiller, 1997). In contrast, collaborative models emphasize the importance of nurturing learning communities within which teachers try new ideas, reflect on outcomes, and co-construct knowledge about teaching and learning in the context of authentic activity (e.g., Borko & Putnam, 1998; Perry, Walton, & Calder, 1999). However, although there is a clear movement towards collaborative professional development, there exists disagreement about how to characterize the learning spurred in collaborative contexts. Conceptions range from psychological, “in-the-head” models focused on how individuals’ knowledge, beliefs, and skills are shaped by collaboration, to situated or distributed models that characterize learning as inseparable from the socially situated activity within which “knowledgable skill” is developed and used (Lave, 1991; Moore & Rocklin, 1998). In the face of these conflicting descriptions, what is clearly required is an analytic theory of learning that encompasses the social and the individual without oversimplifying the contribution of either, and that explains individual and collective development in the context of learning communities (Cole, 1991; Damon, 1991; Moore & Rocklin, 1998; Stein et al., 1999). To this end, this article explores the dynamic interplay between social and individual learning processes within one collaborative professional development initiative, and the relationship between the learning achieved and shifts in teachers’ professional practices.

This paper emerges out of a 2-year collaborative research partnership in which researchers and teachers worked together to situate new instructional principles within classrooms, with the more specific aim of fostering strategic, or “self-regulated” learning by students with learning challenges (Butler, 1995, 1998a, 1998c). Concurrently, we sought to co-construct a collaborative professional development model that could be associated with sustained revisions in practice. Elsewhere we report student outcomes emerging from our interventions (see Beckingham, Novak, Jarvis, & Butler, 2002; Butler, Jarvis, Beckingham, Novak, & Elaschuk, 2001). In this article, we analyze the evolution of our professional development model across the 2 years of the project. In the sections that follow, we clarify the theoretical principles underlying our model and our central research questions. Next, we report findings from each year of the study wherein we evaluated our model. We close by revisiting the relationship between individual and collective learning in the context of a learning community, and by discussing implications of our findings for designing professional development.

2. Theoretical principles underlying emerging professional development models

In recent discussions of in-service professional development, researchers are criticizing traditional approaches for resulting in surface level or shallow implementation of instructional principles as opposed to deep rooted changes in practice (Englert & Tarrant, 1999; Gersten, 1995; Henry et al., 1999), and for promoting little sustained use of innovations, even when those innovations are effective (Gersten et al., 1997). Another criticism is that, because expert-driven, top-down workshops are typically designed to convey procedural skills (Palincsar, 1999), they run the risk of casting teachers as “technicians” whose job it is to implement defined “algorithms” for teaching. In contrast, emerging professional development mod-
models emphasize that teachers are professionals, not merely technicians, and that teaching is an intellectual activity, requiring complex, contextu-
ized decision-making (Ball, 1995; Palincsar, 1999; Palincsar, Magnussen, Marano, Ford, & Brown, 1998). A key implication is that instruc-
tional change requires a shift in conceptual knowledge about teaching on which decisions can be founded, not just the development of procedural skills (Gersten et al., 1997). As a result, emerging models, including the model evaluated in our research, seek to support teachers’ reconstruction of professional knowledge as the foundation for revising practice.

A related criticism of traditional models is that they are based on questionable assumptions about the nature and origins of professional knowledge, and about how to forge connections between research and practice. Traditional models have been criticized for making false distinctions between formalized and practical knowledge (Bos, 1995; Palincsar et al., 1998). The assumption is that construction of formalized knowledge is the purview of researchers, who then convey new principles to teachers, while teachers’ roles are to implement research findings (Gersten et al., 1997; Perry et al., 1999). An alternative view is that both teachers and researchers bring combinations of formalized and practical knowledge to classrooms as they seek to make instructional change. Further, when teachers and researchers collaborate to examine and reflect on practice, both are involved in co-constructing formal and practical knowledge. Thus, emerging approaches to professional development seek to find the interface, and blur distinctions, between “internal” (practice) and “external” (research) knowledge (Ball, 1995; Bos, 1995; Gersten et al., 1997; Henry et al., 1999; Palincsar et al., 1998; Schumm & Vaughn, 1995). Professional development may be better conceived as teachers, or researchers, coordinating new conceptual frameworks with knowledge grounded in teaching (Bromme & Tillema, 1995). From this perspective, the challenge to collaborative models is to explain how collective and individual learning processes co-operate to spur teachers’ dynamic reconstruction of practice and, correspondingly, of reframed conceptual knowledge.

2.1. Professional development as collaborative inquiry

Collaborative models of professional development engage teachers in joint inquiry about teaching as a means of shifting practice (e.g., Borko et al., 1997; Boudah et al., 2001; Briscoe & Peters, 1997; Englert & Tarrant, 1995; Hunsaker & Johnston, 1992; Palincsar et al., 1998; Perry et al., 1999; Rennie, 2001; Stein et al., 1999). At the heart of most approaches is teachers’ collaborative problem-solving in pursuit of common goals. Groups of teachers and/or researchers work together locally, within schools, or peripherally, for example, in meetings separate from immediate practice, to develop new ways of teaching. Individually or collectively, teachers try out new ideas in classrooms and monitor the success of their efforts. They come together to review their instruction, talk about outcomes, and critically reflect on their teaching (Ball, 1995; Englert & Tarrant, 1995). Over time, within collaborative problem-solving groups, teachers develop a shared language for talking about teaching and co-construct knowledge within a discourse community (Bos, 1995; Englert & Tarrant, 1995).

A “communities of practice” (COP) framework has often been used to describe these collaborative initiatives (Englert & Tarrant, 1995; Henry et al., 1999; Lave & Wenger, 1991; Palincsar et al., 1998; Perry et al., 1999). COPs were originally conceived from an anthropological perspective with the aim of describing how newcomers are enculturated into a historically situated community with established traditions, roles, and practices (e.g., Lave, 1991; Lave & Wenger, 1991). From this perspective, learning is inextricably linked with the process of developing an identity (e.g., as a teacher, a scientist), and is effected in the process of moving from “legitimate peripheral participation” to full participation within a given community (Lave & Wenger, 1991). An example in an educational setting might be the professional development of preservice teachers. Most teacher preparation programs require practice, in which preservice teachers take on partial, but meaningful, roles in schools on the way to becoming full participants. Working in tandem with practicing teachers, the
emerging teachers assume increasingly central roles, while simultaneously constructing knowledgeable skill through reflection-on-action. A key point is that, for these newcomers to the teaching profession, development of identity as a teacher is, ideally, the goal that motivates and shapes learning processes.

Applying a COP framework has advanced understanding of teacher learning in at least two critical ways. First, a COP perspective foregrounds the influence of history, society, and community in shaping teacher learning. Individuals do not construct knowledge in a vacuum, their construction of knowledge, beliefs, attitudes, and skill are socially and culturally situated. Societies define what comprises a “teacher”, and thus the identity that newcomers strive to adopt. COPs also build from particular, often evolving, goals, values, and conceptual frameworks that drive the nature of schooling, curricula, and ultimately teachers’ decision-making in classrooms. Indeed, as noted earlier, one of the pressures on teachers is to revise conceptual frameworks and practices responsively given shifts in societal structure, values, and resources. The interconnections between history, culture, society, theory, and individual learning are reflected in this on-going press for change.

A COP framework has also advanced understanding by analyzing how learning between and among teachers is grounded in reflection on action. Building from a COP framework, researchers argue that knowledge construction about teaching and learning emerges from and remains situated in practice (Barab & Duffy, 2000; Brown, Collins, & Duguid, 1989), that individuals benefit from opportunities to share expertise while engaged in a common pursuit, and that the knowledge constructed transactionally in discourse communities is richer than knowledge a teacher can construct on his or her own. For example, Perry et al. (1999) characterize COPs established in teachers’ professional development as “intellectual groups who share goals/purposes and engage in planning, enacting, and reflecting. In these communities learning proceeds from action, expertise is distributed, and knowledge is socially constructed” (p. 218). Lave (1991) emphasizes that the goals community members seek to achieve should be defined by authentic activity, and that these goals are best perceived by newcomers through exposure to activity in situ.

On a practical level, collaborative inquiry in a COP may also be beneficial for teachers by structuring opportunities for reflection not typically available to practicing teachers. It is difficult to make meaningful shifts in practice without stepping away from immediate demands or having time to reflect on teaching. Further, working with others has the potential to sustain momentum through inevitable challenges. Rather than abandoning a new initiative, collaborative communities may generate energy and enthusiasm that fuels persistence with innovations. A structured approach to implementing ideas and tracing outcomes may also ensure that new initiatives remain a priority. Thus, at a theoretical level, the concept of COP has been profitably employed to better understand teacher learning. Practical advantages may also accrue when structuring professional development using a COP framework.

Although a COP framework has enriched understanding about teacher learning, applying the framework to the professional development of practicing teachers presents particular challenges. These challenges derive in part from how COPs have been established. Consistent with the original conception of COPs as intact and historically grounded communities (Lave, 1991; Lave & Wenger, 1991), some have argued that the teaching profession should be constituted as a learning community, and that opportunities should be provided to educators to learn as part of practice (Fullan, 1995; Scott & Weeks, 1996). Embedding a culture of learning in an existing community has the potential to sustain reflection-on-action and support on-going renewal. More frequently, however, emerging initiatives have fostered the development of temporary learning communities that form to reach shared, but more targeted goals, such as integrating a new technology or reading curriculum into a district or school (e.g., Boudah et al., 2001; Briscoe & Peters, 1997; Henry et al., 1999; Perry et al., 1999). In these more focused initiatives, communities often include practicing teachers and researchers seeking to bridge research and practice together (e.g., Borko et al., 1997;
Henry et al., 1999; Perry et al., 1999; Rennie, 2001). Learning in this context contrasts with the learning of newcomers being enculturated into existing practice, even when keeping in mind that newcomers are not just passively shaped by practice but also contribute to its development. In these kinds of fluid, collaborative initiatives, community members typically are already fully participating practitioners wishing to re-envision what they are doing. Thus, unique challenges to professional development in this context are to (a) support the co-construction of new ways of teaching based on shifting values or conceptual frameworks; (b) promote meaningful shifts in practice that sustain even when a temporary learning community dissolves; and (c) define the relative roles of professionals and researchers in advancing knowledge about teaching. This paper evaluates a professional development model in order to better understand such challenges.

2.2. Professional development and self-regulated learning

Discussions about collaborative professional development often focus on the manner in which learning communities foster teachers’ co-construction of new ways of teaching. At the same time, it is useful to consider the learning processes of the teachers working within collaborative communities. A model of self-regulated learning can be helpful in that regard by foregrounding the learning processes of individuals within context (Butler & Winne, 1995; Kremer-Hayon & Tillema, 1999; Zimmerman, 1994).

Descriptions of self-regulated learning by students in classrooms identify key learning activities: interpreting tasks to define learning goals, selecting, adapting, or even inventing strategic approaches to achieve desired outcomes, reflecting on progress and self-assessing performance, and revising learning approaches adaptively. Parallel to this description, in the context of collaborative efforts, teachers are supported to self-regulate their learning about teaching. Teachers are typically engaged in activities that promote “on-going reflection on practice and underlying assumptions” (Borko & Putnam, 1998, p. 3). They are supported to identify instructional principles associated with “best practices” (Ball, 1995; Englert & Tarrant, 1995; Palincsar et al., 1998), plan activities consistent with principles (i.e., constructing instructional strategies), enact their plans in practice, monitor outcomes, and critically reflect on their efforts (e.g., Henry et al., 1999; Perry et al., 1999). Note that, focusing on individual learning processes does not require divorcing the individual from context. Indeed, the potential of merging a COP framework and models of self-regulation is that the latter describes how individuals strategically adapt within environments to achieve authentic goals (Zimmerman & Schunk, 2001).

Instructional recommendations for supporting self-regulated learning in students also parallel those in emerging professional development models. For example, research suggests that self-regulated learning by students can be enhanced by engaging them in interactive discussions in which they reflect on learning processes (e.g., Butler, 1995, 1998c; Palincsar & Brown, 1984; Pressley et al., 1992). Instructional approaches that promote students’ independent and continued use of strategies include involving students in strategy construction, in pursuit of clearly understood learning goals, and situating discussions about strategies in the context of meaningful work (Butler, 1995, 1998c; Palincsar & Brown, 1988; Pressley et al., 1992). Similarly, in collaborative models, teachers are supported to self-regulate their learning in the process of revising and reflecting on teaching. As is the case with students, engaging teachers in co-constructing and enacting new instructional strategies while they are focused on achieving goals may also be associated with sustained use of revised conceptual frameworks and methods. From this perspective, a key interface between a COP framework and models of self-regulation is at the point of defining goals. From both perspectives, the goals a learner/teacher strives to achieve drive the direction of learning (Butler & Winne, 1995). While a COP framework suggests that practitioners’ goals should be connected to authentic activity, models of self-regulated learning elaborate how learners, individually and/or collectively, can adaptively
and dynamically adjust performance in situ to achieve desired, authentic goals.

Significantly, in the projects described here, researchers’ and teachers’ shared enterprise was to co-construct instructional strategies that would promote students’ self-regulation following the “strategic content learning” (SCL) approach (Butler, 1998b; Butler et al., 2001). Specifically, the teachers’ goal was to learn how to engage students in interactive discussions that helped them learn how to reflectively guide their own (learning) activities based on a clear view of (task) goals, and to critically monitor outcomes so as to re/co-construct knowledge about effective (learning) processes. Not accidentally, the assumptions and instructional principles underlying our in-service structure paralleled the principles teachers were striving to learn (see Butler, 1995, 1998a). Our task was to engage teachers in interactive discussions that helped teachers learn how to reflectively guide their own (teaching) activities based on a clear view of (instructional) goals, and to critically monitor outcomes so as to re/co-construct knowledge about effective (teaching) processes.

In sum, emerging professional development models have the potential, not just to promote teachers’ use of effective instructional procedures, but to support them to reflect on and revise teaching practices so as to construct new conceptual knowledge. It follows that professional development need not be collaborative; even in the absence of collaborative support, teachers can improve practice by systematically, planfully and reflectively self-regulating their learning about teaching. Nonetheless, even when teaching or learning on their own (i.e., outside of a COP), teachers’ learning is fundamentally shaped by the social, cultural, and historical contexts within which their learning transpires (e.g., by the definition of teaching adopted within a given school or a particular culture). Further, as noted above, there are also multiple benefits to working collectively to define and revise one’s practices. Social interaction may foster self-regulated approaches to learning (Harris & Graham, 1996; Palincsar & Brown, 1988; Pressley et al., 1992). Through social interaction, benefits may be accrued in the richness of conceptual understandings co-constructed with others and sustained commitment to innovation.

2.3. Theoretical principles applied in our project

As in initiatives defined using a COP framework, our goals were to assist teachers in identifying principles underlying “best practices”, enacting principles in context, critically reflecting on outcomes, and (re)constructing knowledge about teaching and learning based on new experiences (Borko & Putnam, 1998). To this end, we invited teachers within one school district to participate in a learning community, established within and across schools, with the common goal of trying an instructional innovation (i.e., SCL). Participants in our learning group were district support personnel, classroom teachers, and researchers. Expertise was thus distributed in the sense that participants differed in roles, knowledge, training, and experience. At the same time we considered that both school-based personnel and researchers brought formalized and practical knowledge to our collaborative efforts. Further, although our community was temporarily established with a focused goal in mind, we designed our project to offer sustained support to teachers across a 2-year period.

In our community, our common goal was to promote independent, strategic, and problem-solving approaches to learning by students who were struggling (e.g., students with learning disabilities). To this end, we chose to adapt the SCL approach for use in secondary classrooms. As described earlier, SCL provides instructional principles focused on promoting students’ self-regulated learning. At the time our project began, SCL had been empirically validated at the post-secondary level (Butler, 1995, 1998a), but little research existed on how to adapt the model for use with adolescents. Thus, the common goal in our learning community was to co-construct and evaluate instructional approaches at the secondary level that would be consistent with SCL principles.

In emerging models of professional development, researchers and teachers often define best practices to guide instructional revision (e.g., Ball,
This was true in our case, where we collectively focused on implementing SCL. But a danger arises if COPs are centered on helping teachers learn a given intervention. Such a goal can lead to a technical view of teaching, a “top-down” approach, or too narrow a focus on “procedures”. The challenge, then, is to define ways of taking lessons learned within one practical context to a different instructional setting, without undermining teachers’ active role in construction or revision of practical and formalized knowledge.

In our projects, we approached this problem by using SCL to establish common goals and instructional principles. Then teachers and researchers co-constructed instructional strategies for situating principles in classrooms, and in that context, recursively re/co-constructed knowledge about goals, principles, and procedures. We evaluated whether this approach would promote teachers’ on-going and active reflection and reconstructions of conceptual knowledge about teaching as a foundation for making instructional change.

In the sections that follow, we describe our project in more detail and report on our research findings. In the first year of the project we were primarily concerned with tracing teachers’ learning processes. With this goal in mind, and in light of the conceptual framework undergirding our professional development model, we examined whether: (a) teachers were indeed reflecting on practice, (b) teachers constructed new conceptual understandings that formed the basis for teaching revisions, (c) there were positive shifts in teachers’ practice, and (d) teachers perceived corresponding gains for students. In the second year we continued our inquiry into teacher learning processes, but also evaluated our success in fostering revisions to teaching that might be sustained over time.

3. The Lower Mainland project: year one

The Lower Mainland project was launched with an introductory workshop to a school district in the greater Vancouver area and an invitation to teachers to engage in collaborative research. In the first year, 10 teachers joined the project. All were female and they had between 2 and 32 years of teaching experience. Nine of the teachers chose to implement SCL in learning assistance or resource settings to support students with a range of special learning needs in grades 8 to 11. One teacher chose to use SCL to organize her writing instruction within a 9th grade combined Humanities/English classroom. Teachers applied SCL within four schools that differed in many ways. For example, one school was new, so that teachers were in the process of defining relationships and systems, while teachers in another school operated in a long established context. Two of the schools operated on a semester system; in two others classes were year long and met every second day. In all schools, SCL was implemented by teachers in one or more of their classes. The number of participating teachers across the four schools was 1, 2, 3, and 4, respectively.

3.1. Professional development activities

Fig. 1 depicts the professional development activities in the first year. We began with the aforementioned, 1 – 1.5h introductory workshop that introduced SCL instructional principles (see Butler, 1995, 1998a; Butler et al., 2001). It was at this workshop that we invited teacher to collaborate with researchers (and with colleagues) to co-construct instructional strategies. Collaboration was then facilitated both within and across schools. Within schools, the researchers first met with teams of teachers to review our common goals and start problem-solving instructional strategies. Collaboration was then facilitated both within and across schools. Within schools, the researchers first met with teams of teachers to review our common goals and start problem-solving instructional strategies. Subsequently, the principal researcher worked one-on-one with teachers in classrooms. Activities included co-planning, co-teaching, and debriefing. Initially, visits occurred roughly once per week in each class, but the frequency declined over time as teachers felt more comfortable. Teachers were also encouraged to collaborate with one another between researcher visits. Research assistants also visited classrooms weekly. They worked with teachers to develop systems for evaluating outcomes (e.g., for tracing student progress) and facilitated data collection. As a source of data and to encourage reflection,
teachers documented their efforts to use SCL on personalized versions of “teacher reflection forms”. In three schools, short, introductory workshops were also organized to introduce other school personnel to the project (e.g., educational assistants, peer tutors).

In addition, researchers organized several opportunities for teachers to collaborate across schools. Each “all-schools meeting” began with an open brainstorming of “successes” and “challenges”. Teachers then had opportunities to share successful strategies and problem-solving challenges within small group discussions. Each meeting closed with a tie-up discussion where ideas were shared across groups. District resource personnel were involved as equal participants in all-schools meetings. Although the project was started because of a ground-swell of interest from a set of 10 practicing teachers, the project received visible and continuing district support.

3.2. Research design and data collection

Researchers have called for qualitative inquiry that examines learning processes within natural contexts (e.g., Evensen, Salisbury-Glennon, & Glenn, 2001; Pintrich, 2000) and for qualitative case studies that investigate the success of professional development initiatives (e.g., McCaslin & Hickey, 2001). Consistent with these recommendations, in this research, we drew on an interpretive, qualitative case study design to investigate teacher learning (Briscoe & Peters, 1997; Creswell, 1998; Guba & Lincoln, 1994). To obtain a rich description of learning processes and outcomes, we employed multiple data collection methods, including interviews, observations, and document collection (Merriam, 1998; Yin, 1994). In this context, we also engaged teachers in the research process, rather than doing research “on” teachers (Agar, 1996; Wesley & Buysse, 2001). Indeed, research procedures were developed collaboratively with teachers, building from methods used in previous studies (e.g., Butler, 1998c).

For example, teachers participated in defining research procedures for evaluating student outcomes. In previous studies, multiple parallel case studies had been used to trace students’ progress. For this project, teachers and researchers again decided to conduct multiple case studies, but this time within a two-group (intervention/comparison) pre–post test design. Case study data for all students included pre-test and post-test questionnaires that assessed students’ perceptions about and approaches to learning, chronicles of students’ work, and teachers’ daily reflections on their interventions and associated student performance (see Butler et al., 2001). At the same time, teachers and researchers also co-constructed methods for conducting a case study of our professional development model. Data sources here included notes from school visits, semi-structured observa-
tions of classroom instruction, teachers’ reflection forms, summary notes from all-schools meetings, and end-of-the-year, semi-structured teacher interviews. In year-end interviews, teachers were asked to describe student successes and disappointments, outcomes they experienced as teachers, their perceptions of in-service and research procedures, whether they would recommend the intervention to other teachers, and advice they would give to new teachers wishing to try SCL. Taken together, these various sources of data allowed us to investigate teacher learning over time.

3.3. Data analysis and interpretation

Findings reported here are based on systematic analyses of data from the all-schools meetings and teacher interviews (Merriam, 1998; Lincoln & Guba, 1985). First, interviews were transcribed and line numbers assigned to transcripts and minutes from all-schools meetings. Pseudonyms were assigned to each school and teacher to ensure confidentiality. All sources of data were then tagged with an identifying referent. For example, “TL, 31–35” refers to the excerpt from Tammy Lansing’s interview, lines 31 to 35.1 Next, four researchers sorted the data based on its fit to topics reflecting our research questions (e.g., “Were teachers reflecting on practice?”). Next, the four researchers met to consider how the evidence “answered” each question. A set of codes was collaboratively constructed, inductively, that captured the meaning expressed in each piece of evidence. As a first test, all four researchers examined each piece of evidence and assigned one or more codes. Memos were kept of observations that emerged and formed the basis for code revisions. Subsequently, two researchers applied a revised set of codes to another subset of data. Because inter-rater agreement at this stage was high, only minor modifications to coding criteria were required. Two researchers then coded the full set of data with an inter-rater agreement of 92% (all disagreements resolved through discussion).

Once the data were coded, tables were constructed that summarized the data and allowed us to check for underlying patterns (Miles & Huberman, 1994). Columns in each table represented sources of data (i.e., each teacher interview or all-schools meeting). Rows reflected codes or coherently related sets of codes that summarized the meaning derived from the data. Recorded in each cell was the referent for a particular piece of evidence. Thus, when tables were examined for patterns, it was possible to ascertain the consistency with which teachers made a particular observation, the emphasis placed on a topic by any given teacher, and the prevalence of topics raised at all-schools meetings. Table 1 provides an example of how the data were displayed in tables. Conclusions drawn concerning our research questions were based on an inspection of the evidence summed in these displays (Miles & Huberman, 1994).

3.4. Results and discussion

In this section we interpret the data to answer four research questions of greatest importance at the end of year one. These were: (a) did teachers actively reflect on their teaching; (b) did teachers gain new conceptual understandings; (c) did teachers shift what they were doing in practice; and (d) did teachers perceive corresponding gains for students?

3.4.1. Active reflection by teachers and students

Table 1 is an excerpt from a display we constructed to find patterns in teachers’ and students’ learning processes.2 A review of findings suggests that students and teachers were both actively learning during the first year of the project. Evidence for students’ active reflection is provided in the first row of the table. In each of the all-school meetings and in seven final interviews, teachers described how students were thinking more actively about learning. For example, LV explained, “The students for whom it clicked, it made them think about their own learning, which I really liked because I don’t know that we do that

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1 All names are fictional.

2 We present this table excerpt to illustrate our interpretive process. However, space restrictions preclude presenting the full set of original tables.
enough in school. We tend to feed kids. We sort of pump them full of stuff and tell them how to learn” (9–18). Similarly, CF explained that one of her students now “thinks about strategies all the time and thinks of strategies for other people” (24–25).

Rows 2 and 3 describe teachers’ active learning processes. In eight of the final interviews, teachers described how they were thinking actively about teaching while trying to revise their practices (row 2). For example, TL explained that implementing SCL in her English/Humanities class “forced me to sit back and think about lower end students in the class and forced me to be more reflective in how to help these students” (222–228). Similarly, LN explained, “I felt that I had a real opportunity to reflect on my teaching. [SCL] was very powerful that way. It helped me get the big picture of where we’re going with these students rather than just trying strategy after strategy” (200–204). Note how this quote captures not only LN's opportunities to reflect but also her self-regulated learning about teaching. Instead of just trying strategy after strategy, she was learning how to try out and

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### Table 1
Teacher and student learning processes in SCL classrooms: year one

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<td><strong>Teachers were thinking actively about their own practice</strong></td>
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<td><strong>Learning to use SCL takes time (it was a learning process for teachers)</strong></td>
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**Notes:** “Pseudo-initials” represent teacher participants; AS# = the first, second, or final all-schools meeting; table entries correspond to the referent for a piece of evidence included in the table (e.g., MP 214–219 = lines 214–219 from MP’s final interview); X indicates the columns for which there are entries for at least one teacher.

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3 Line numbers reference the source of a quote or description from teacher interviews or meeting minutes. These are provided to cross-reference interpretations to the original data source.
evaluate strategies in a more focused way, based on a clearer vision of goals. In addition, in four interviews and each all-school meeting, teachers explained that making instructional shifts requires time to adjust to a new way of thinking (row 3). As TM succinctly stated, “teaching style is something that is going to change with time” (199–201). In her final interview, CD captured her learning process in a series of self-reflections. Many of her comments centered on how it takes time to change: “It’s a bit scary, but maybe that’s me, facing something that is totally new and I knew nothing about. So, you learn as you go” (CD, 331–332).

Interpretations of other data displays showed that teachers were actively involved in constructing instructional strategies as well as research procedures. For example, in nine out of 10 teacher interviews and in each all-schools meeting, teachers emphasized that instructional strategies and/or research procedures were tailored to their respective contexts or reflected their contributions. For example, CB explained her decision-making about how to apply instructional principles: “You can only try it on. You can’t impose a teaching style. You can only try it and see if it works for you as well. Or if you think it is effective for students” (CB, 188–190). Similarly, initially CD was worried that teachers might be expected to adopt specific approaches, but was pleased that she could adapt procedures to meet her needs: “So you don’t feel, oh my god I’ve got to use this structure, and if I can’t use this structure I’m going to fail at the whole thing. And that’s how I felt at the beginning. And it isn’t like that at all because you develop your own. Whatever works for you” (CD, 281–283).

In sum, our findings suggest that teachers and students were learning in parallel. Teachers reported that students were becoming active learners, reflecting on learning processes. At the same time, teachers were engaged in revising their teaching and reflecting on teaching practices. Similarly, while students were engaged in co-constructing strategies with teachers for completing academic work (as evidenced in copies of student work and teacher reflection forms), teachers were co-constructing procedures with researchers for improving their instruction.

3.4.2. Co-constructing conceptual understandings

In interviews and meetings, teachers were asked to describe outcomes that emerged from participating in the project. A consistent finding (from nine out of 10 interviews and each all-schools meeting) was that teachers gained insights into teaching practices or effectiveness. These insights reflected conceptual changes in teachers’ knowledge about teaching and learning. For example, TL explained that being teacher-directed is more efficient in getting out the information, but it comes down to a philosophical question of content vs. process. Process is really what it’s all about and I don’t really see why we couldn’t cut down on some of the content to allow for more process (196–198).

MP noted that “That’s my philosophy. SCL made me realize I need to do less talking and give more wait time and give them more opportunity to do more thinking” (224–228). Similarly, CB stated,

I like the adjustment in thinking. The slowing down. Because we’re so eager all the time to get kids on with things because they have deadlines and things to accomplish. And so you end up doing stuff for them, which isn’t facilitating independence (194–201).

These quotes illustrate how teachers were gaining new insights about teaching consistent with SCL instructional principles.

3.4.3. Meaningful shifts in practice

When describing outcomes associated with the project, teachers also described positive changes they were making in their practice, including improvements in instructional methods, classroom routines, and their ability to match instruction to student needs. For example, in the first all-schools meeting, teachers described how classroom routines improved because “less time is wasted in ‘getting going’ since students have strategies that they can reflect on for independent problem
solving” (AS1, 103). Similarly, at the second all-schools meeting, teachers described how SCL helped them be more systematic and organized in terms of managing their time (AS2, 129). In terms of improvements to instructional methods, CF “learned to use questioning and to try to understand how the student approaches tasks before you start giving them strategies” (71–73). Both TM and TL felt that SCL helped lend a structure to their teaching based on a clearer vision of goals. TM said that “I really like the fact that it’s based upon individual students. I like that it gives focus, structure to your teaching, helps me keep the goal in mind” (199–201). TL explained, “SCL helped me to sit down and analyze what had to happen” (158).

Teachers also reported an improved ability to communicate with students. At the first all-schools meeting, teachers agreed that SCL ‘promotes meaningful discussions with students and provides opportunities for choice’” (AS1, 85). Teachers felt they were better able to assess student needs because they listened to and observed them more closely. For example, TM explained that SCL “opened up my eyes for what level he was really at...by enabling him to show me where he needed help. I was surprised to see this kid really couldn’t read” (15–19). Similarly, CF was pleased when “Deb and I were talking [while working with A] and Deb really helped me see how A processes information” (CF, 172–173).

3.4.4. Gains for students

In interviews and all-school meetings, every teacher identified beneficial outcomes for students. In a few cases the gains teachers described were couched in quite general terms (e.g., students “excelled”). But teachers also specified improvements for students in their confidence, understanding of task demands, strategies for learning, self-awareness, and self-direction, independence, responsibility, and/or control over their own learning processes. For example, at the first all-schools meeting teachers described how SCL builds confidence with students and creates awareness of strategies already developed. At the second all-schools meeting, one teacher described how her students were assuming “more ownership and control” and were “taking more responsibility for their work” (AS2,101). Other teachers described students as “more focused on task analysis” (AS2,95) and “more independent learners” with “greater self-efficacy and independence” (AS2,129). In interviews, teachers described both gains for individual students and outcomes that were more generalized. For example, CF noted that “[A] gained confidence in her ability and has taken full ownership over her learning” (14–19). TM said “It’s an approach that respects them and impacts on self-esteem. And it helps them to take control and feel in control” (47–48). Taken together, excerpts from all-schools meetings and interviews reveal how teachers perceived multi-faceted gains emerging for their students.

3.5. Successes and challenges

Positive outcomes from the first year of the project were that teachers were actively reflecting on and self-regulating their learning and were constructing new knowledge about teaching. Teachers’ descriptions suggested that shifts in knowledge could be associated with actual changes in classrooms and with corresponding gains for students. However, at the end of the year, we identified persistent challenges that needed to be addressed. One challenge was that, as teachers noted, making meaningful shifts in instructional practice is something that takes time. Although teachers felt that they had made substantial gains through the year, they were still struggling with certain aspects of SCL implementation. For example, teachers still found it difficult to juggle long- and short-term goals. While they wanted to promote students’ reflection on learning, they felt pressured to help students complete assignments and to “get through the curriculum” (see also Briscoe & Peters, 1997; Kremer-Hayon & Tillema, 1999). Another challenge was to coordinate SCL across school personnel. Teachers were definitely positive about the opportunities they had to work collaboratively with other teachers. For example, CB explained: “I liked the debrief sessions [all-school meetings] that we had with the other teachers. When we did the positives-negatives it
really clarified your thinking on what was working and why you were doing it” (57–58). Similarly, TM noted how working together with the other teachers within her school was useful: “I think all four of us are doing it in a slightly different way, so the more people you talk to the quicker you probably find something that can work for you” (187–189). However, teachers wished that they had been better able to mentor classroom assistants. For example, CD explained,

As head of the department I have a regular meeting once a week with my classroom assistants, and we spent a lot of time discussing that on how to switch that [instructional style] around. They found it very difficult but saw the value of it (CD, 169–171).

Teachers also were disappointed by the inconsistencies between their new approaches and those used in other classes (i.e., by teachers in academic classes) or by substitute teachers.

The third, most critical, problem was that teachers appeared to rely heavily on researchers to sustain their use of SCL. As expected, when asked about our professional development model, teachers emphasized that researcher modeling, observation, and debriefing were the most valuable components. As LN explained, “the most useful time for me was when Deb came to [the school] and worked with students while I worked with them” (66–67). Similarly, LV said, “I think the very best thing is to watch the process in action, watch Deb work with students, and then as quickly as possible, have her return the favor” (219–220). At the same time, what was troubling was teachers’ perception that, without the researchers’ presence, they might have abandoned the project. They perceived a need for “expert” support and for a catalyst to spur change (see also Hunsaker & Johnston, 1992). For example, LN noted that she “might have lost interest in the project without [ Deb’s] on-going influence” (98–99). Similarly, LV said,

I think without the kind of on-going in class support that Deb could give us, I think they’d [ other teachers trying SCL] try it once or twice and give up. That’s my guess. Because it is a shift in thinking and a shift in a whole ideology towards education (127–131).

CB also felt that,

For me it’s most effective when you guys are here on a regular basis, because it’s a prompt for me and a lift for me to really say, ‘oh yeah, let’s really get into it and get going and be consistent (58–60).

CF agreed that “her [ Deb’s] enthusiasm carries you through” (96–98). Similarly, EH explained, “If she hadn’t been there to...I don’t think it would have gone” (259–262). These comments suggested that the teachers’ were depending on “outsiders” (i.e., researchers) for their sustained use of SCL. This raised the question of how much teachers would continue to use SCL once the 2-year project was over.

4. The Lower Mainland project: year two

In the second year of the project we evaluated the sustainability of the changes we were observing. To that end, we focused attention on three research questions: (a) did teachers’ practice shift in meaningful ways that might be sustained over time; (b) did students continue to benefit; and (c) what did teachers think were the most important in-service activities?

Of the 10 teachers in the first year of the project, seven continued, bringing with them three additional colleagues. Two teachers wanted to continue but could not, because they left their appointments. Only one teacher chose not to continue. This latter teacher had joined the project in the second semester and had not started with the original cohort. She was the only teacher working on her own within a school and so may have felt isolated from her colleagues. But in addition, from the beginning, this teacher had difficulty finding time to try new practices and reflect on her teaching, which was why she started the project late. Lack of time in the second year may also have influenced her decision to withdraw.

Thus, in the second year, 10 teachers participated (seven continuing; three new) within three of
the four original schools (resulting in teams of 4, 3, and 3 teachers per school). These teachers were all female with a wide range of teaching experience. As in the first year, nine teachers implemented SCL in learning assistance or resource settings (grades 8–11), while one continued to use SCL to teach writing within her 9th grade classroom. Professional development activities were the same as those used in the first year (see Fig. 1), with the exception that the introductory workshop was abbreviated and classroom visits were less frequent. With continuing teachers, the primary researcher faded back SCL support to just a couple of visits per semester, although research assistants continued to visit classrooms weekly to assist in data collection. Two all-schools meetings were held to support teachers’ collaboration across schools.

4.1. Data collection and analysis in year two

Data collection procedures were the same as in the first year, except that the end-of-the-year interviews shifted focus to match our new research questions. Specifically, we asked teachers to discuss student successes and disappointments, outcomes for themselves as teachers, whether any aspects of SCL had become part of their day-to-day practice, barriers or challenges to using SCL, what it would take to keep “SCL alive” in the future, and what kinds of in-service supports others would need if they wanted to try SCL. As in year one, interviews were transcribed and evidence was tagged with identifying referents (e.g., “TL, 31–35”). To analyze interview data, the principal researcher initially read the interviews to identify themes related to the research questions. Tables were constructed that cross-referenced themes, in rows, with teachers, in columns. As in the first year, line numbers were used to indicate instances when a given teacher addressed a major theme. As a test of the tentative themes, three other researchers were each given a subset of the “blank” tables with the themes and teacher initials. These researchers independently reviewed the interview data, filled out the tables, and fine tuned the themes. Finally, the principal researcher cross-checked each piece of evidence for its fit in the tables. Interpretation of the evidence summed in the tables served as the basis for the conclusions drawn here.

4.2. Results and discussion

In this section we interpret the data to address each research question in turn. We describe whether shifts in teacher practices appeared to be meaningful and grounded in revised conceptual knowledge, whether teachers perceived benefits for students, and whether teachers found some aspects of our professional development model to be most helpful.

4.2.1. Were shifts in practice meaningful and sustained?

Evidence suggests that teachers’ use of SCL became independent, even as support from the principal researcher was faded. Table 2 presents part of our data display related to teachers’ adoption and ownership of SCL. Evidence suggests that teachers did shift their interactions with students in ways that were sustained (row 1). For example, LN described how her interactions with one student had totally shifted way more to listening to where she’s at and helping her find the next piece to solve while she’s working on, rather than starting, OK, let me start at the top of the question, now here’s how I would do it (248–250).

She believed this change reflected a revised approach to teaching:

I felt like it was a real change for me... I feel like it’s really affected how I interact with them, just a general sort of rapport. It’s much less I’m a teacher, you’re a student, I’ll show you how to do this and you do my way after that (254–257).

CD also felt that her general approach to teaching had shifted:

But in the second year now, it’s second nature, and I find it very easy to question a student to get something out of them. And if they’re stymied with the first, my first question... I’m
just easily able to reword it and to still try and pull a response from them. Instead of bailing out or giving them the answer (176–181).

Similarly, CB explained: “it became as automatic with [students] as it did with us in terms of how they think about what they were doing, to work things out for themselves” (58–60). Later, she elaborated:

the whole questioning approach to kids around...what are you doing...what’s your task...what do you have to do...what have you tried so far. That whole repertoire of thinking is just pretty well engrained now” (207–215).

Further, in their descriptions of new teaching practices, many teachers expressed their intention to keep using SCL. Their comments suggested that they had adopted new understandings about teaching and learning, not simply a set of instructional procedures. For example, LN said

I think it’s definitely something that I would sustain in the future... I don’t feel like it’s a program that you kind of were trying this year and now we’re not teaching that way anymore. It’s more of an approach to how you deal with kids and how you teach (685–690).

When asked what it would take to keep SCL going in the next year, EH replied, “I don’t think much, cuz I’ll just keep doing it. I can’t see reverting back to not doing it” (373–375). In response to the same question, PM replied “Oh, I will do it for sure. I’d like to have sheets so that they can write down their strategies, but for sure I’ll do it. Nothing will get me to do it. I’ll just do it” (294–296). CF explained that SCL is now “just part and parcel of the way I think” (350–352), and that “understanding how to move a child through...towards independence through SCL has become part of my thinking and being” (573–579). When asked what it would take to “keep SCL alive in the future”, she responded, “I don’t think I can quit

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<th>Teachers’ sustained use of SCL instructional principles and procedures: year two</th>
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<th>New Teachers</th>
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<td>Teachers shifted their interaction patterns with students</td>
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Teachers used SCL questioning techniques across contexts

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Notes: “Pseudo-initials” represent teacher participants; table entries correspond to the referent for a piece of evidence (e.g., 214–219 = lines 214–219 from a final interview).
using it. No more SCL? I don’t think it’s quit-able” (622–623).

Teachers also described how they had already extended use of SCL to students other than those in the research project (row 2). For example, PM said that

it becomes part of your language too and then you start doing it with other ones before you even know it. Sometimes it might feel overwhelming, like I’ve got to do this with all the kids. But after you sort of focus on one it becomes your language and you start saying it (328–331).

Similarly, CD explained, “my approach to any student now is the SCL approach, whether I’m recording it or not or they’re aware of it or not. That’s how I’m dealing with kids now” (48–52). Taken together, these findings suggest that at least certain aspects of SCL had been incorporated into teachers’ daily practices.

At the same time, teachers did continue to struggle when trying to apply SCL principles. A continuing problem was balancing short- and long-term goals. Similarly, many teachers grappled with finding systems for documenting students’ strategies. Finally, teachers described how resistance from others (e.g., older students, other teachers) sometimes undermined their change efforts. Encouragingly, and consistent with previous research (e.g., Briscoe & Peters, 1997), our data suggested that collaboration helped teachers identify potential solutions to challenges. For example, LN found that she could integrate SCL into the curriculum if she took adequate time to plan. Several teachers reconciled the conflict between short- and long-term goals by focusing on the importance of long-term outcomes. The majority of teachers also described how involving more personnel in the projects might help overcome student or teacher resistance. Nonetheless, an important finding was that continuing teachers were more likely than new teachers to describe compensatory strategies. This latter finding is consistent with the first year data suggesting that making shifts in practice takes time.

4.2.2. Did students continue to gain?

As in the first year, teachers described positive outcomes for students that they linked to their use of SCL. Teachers reported gains for students in self-confidence, active and reflective learning, problem-solving, self-awareness, task performance, and independence. For example, PM felt her students gained because “they found that they could do it. They could figure it out for themselves” (13–15). One of her students, who greatly improved his performance in math, now calls himself “Einstein.” Accordingly to PM,

That’s just huge. Whereas before [he’d say] ‘I can’t do it, this is stupid, I hate this’, now he kind of has a smirk on his face and he’s really willing to explain what he sees...I think he really feels good about it too. He just comes over, like he’s got a little kick in his step right now (86–91).

Similarly, CD summed her students’ gains: “More than anything I think they gained the independence, being able to figure it out themselves” (12–13). As in the first year, teachers described how SCL did not work equally well for all of their students. At the same time, teachers felt that SCL was a valuable approach in the majority of circumstances, linking SCL with positive outcomes.

4.2.3. What professional development activities were most effective?

In their descriptions of what helped them situate SCL in their classrooms, teachers typically recommended a constellation of professional development activities. For example, when asked to describe what teachers in a new district would need to learn and implement SCL principles, CB explained:

Well, that’s the thing that I’ve learned from this, is first of all you start from the initial workshop or the ideas introduced, but it takes the modeling and the reinforcement. You have to be willing to go back and work with a core group of people and help them really establish it as part of their practice. If you don’t do that,
then it’s going to become the flavor of the month (159–163).

Teachers consistently emphasized the importance of: establishing a theoretical framework, seeing SCL in practice, trying SCL and reflecting on the success of their efforts, debriefing, problem-solving, and sharing ideas with other teachers, being observed and receiving feedback on their use of SCL, and interacting with someone expert in and enthusiastic about SCL. These are activities that have been found to be helpful in similar collaborative initiatives (e.g., Boudah et al., 2001; Briscoe & Peters, 1997; Rennie, 2001).

For example, every teacher valued initial workshops that set a common framework for thinking about best practices. Interestingly, our decision in the second year to abbreviate the introductory workshop was not well received. Two of the three newer teachers described how they would have preferred an extended theoretical introduction as a basis for making instructional change. This finding suggests that having a conceptual goal or “guiding light” is critical for directing teacher learning.

As another example, every teacher emphasized the importance of seeing SCL in practice, either through videos or modeling. This emphasis was reflected in the number of excerpts per teacher, which ranged from 1 to 7 and averaged 3.7. For example, when asked what new teachers would need to learn SCL, CD replied: “I think they would have to come and observe in action. They have to see how it is a totally different way of wording your questioning” (86–89). MH also thought that, in addition to an introductory workshop,

the other key piece that I think is absolutely critical is having someone come in and model it for you, and then work along side you where you’re attempting to do it and have time then to debrief after about the struggles and what worked (120–137).

Some teachers recommended including more video and/or opportunities to practice as part of introductory workshops. But as is reflected in MH’s comments above, the majority of teachers (seven of the 10) emphasized the importance of support in their classrooms. For example, PM described the value of watching the principal researcher work with one of her students:

that time was so good watching her do it, and just watching her even turn around a student who started ‘I don’t know what to do’. You know, it’s just amazing to watch by the end of that period, they’re just sucked right into it (135–140).

Teachers needed evidence that the instructional approaches would actually work with their students (see also Rennie, 2001; Stein et al., 1999).

Nine teachers emphasized the importance of talking to others about their attempts to try SCL and/or of having someone observe them use SCL and debriefing about it afterwards. For example, TS suggested that a group of teachers observe another person working with a student and then discuss what they observed:

that way you have a chance to speak to somebody who’s standing beside you and say, ‘well, I would have done that, or, I could have asked this, or she should have done that’...the more conversation you have, I think is the more you learn (249–252).

CD felt that, “to have that knowledgeable one watch me try and do it and get the constructive criticism at the end of it, that is very helpful” (115–119). However, some teachers’ comments, and actions during the years, also reminded us that not everyone learns the same way. While most teachers described the value of being watched and given feedback, two teachers definitely preferred watching others and/or reflecting privately. Further, although teachers again stressed the value of having support from an SCL mentor, many discussed possible ways to build SCL expertise within schools, rather than relying on “Deb”.

Finally, teachers’ descriptions of their professional development were useful in understanding their learning processes. For example, four teachers likened applying SCL to learning a new language. CF explained “the language is really important, and that’s what I found useful about you [Deb modeling] because I would listen like crazy when you were here to see what I could be
saying that would move the students forward” (389–393). But six teachers also emphasized that they were learning to adapt SCL principles, rather than learning a scripted approach to instruction. For example, although MN had articulated the importance of modeling and observation, she explained:

I don’t see SCL as something that everybody does exactly the same way, so I don’t think you need to necessarily mimic somebody else doing it. It’s more the process of trying, then somebody else trying, you know what I mean? (383–389).

Later, she added:

It’s kind of different than learning how to give a test where you learn exactly the procedure, when you can go and try it and check, yah, I did this, I did that. It’s not really like that. It’s sort of a bit more of a paradigm shift (398–401).

As in the first year, eight teachers emphasized that learning SCL takes time. CD, a very experienced teacher, described her 2-year journey in learning SCL:

It was very difficult, very difficult, because I had so many years of teaching leading up to that and you just have a familiar pattern. I think it’s working well until you’re shown differently and then you learn that it was very difficult, to learn to rephrase...But in the second year now, it’s second nature (169–176).

IE explained that what is needed are opportunities to build expertise over time:

I think you need to have...your initial Pro-D, and then you need to have follow-up Pro-D’s and just an opportunity...to ask questions about it and to work on new things, and to expand and to get better and better at it...and add new things on to it” (209–213).

These descriptions reinforce the importance of sustained support for efforts to make instructional change.

5. Discussion and conclusions

In the 2-year project described in this article, we tried to instantiate principles underlying our professional development model within a set of concrete activities, including workshops, classroom visits, and within-school and cross-school meetings (see Fig. 1). In that context, we sought to achieve several types of balance. For example, on one hand we knew that teachers wanted to work towards common goals, build from best practices, and try out an instructional innovation (Ball, 1995; Englert & Tarrant, 1995). To that end, we needed to establish a common framework for thinking about teaching without constraining teachers’ development of personalized instructional strategies or co/re-construction of knowledge grounded in action (Perry et al., 1999). Another balance we strove to achieve was to provide sustained support to teachers without establishing dependence on researchers. We wanted teachers to have access to an experienced SCL mentor who could help them problem solve in situ, while at the same time fostering the development of learning communities within which teachers could support one another (Henry et al., 1999; Lave & Wenger, 1991; Palincsar et al., 1999). Finally, while we knew that teachers would benefit from seeing SCL in videos or through modeling, we also needed to emphasize that SCL could not be scripted, and that multiple instructional practices are consistent with SCL principles (Palincsar et al., 1998). Teachers needed to define personalized approaches to using SCL, tailored for themselves and their students.

We met with some success in our project. First year data documented that teachers were reflecting on practice, constructing new knowledge about teaching, and making positive instructional shifts. They endorsed our common theoretical framework while still developing personalized instructional approaches. At the end of the first year, we were worried that teachers were too dependent on researchers for maintaining instructional changes (Hunsaker & Johnston, 1992). However, second year data suggested that teachers were sustaining use of SCL, even as the principal researcher’s support was faded. Note, however, that research assistants did continue to visit classrooms weekly.
even in the second year of the study. Their focus was on data collection, and not SCL mentoring, but their continued presence, and data collection itself, may have supported teachers’ sustained use of SCL. Thus, challenges for the future are clearly evident in at least two areas: (a) avoiding dependence on “outsiders” for sustaining an innovation; and (b) fostering development of self-sustaining COPs within schools, rather than a “temporary” 2-year learning community (Stein et al., 1999).

Nonetheless, it appears that the professional development model used in our project promoted “deep rooted” changes in teaching. These changes were based on teachers’ instantiation in practice of new decision making criteria, as opposed to mastery of specific routines (Gersten et al., 1997; Palincsar et al., 1998). As teachers emphasized, introductory in-service workshops would not have been enough to effect these meaningful changes shifts in practice (Borko & Putnam, 1998; Perry et al., 1999). What was required were ongoing opportunities to co-construct knowledge and revise conceptual frameworks through reflection on experience (Palincsar et al., 1998; Rennie, 2001).

More generally, our research illustrates the value of interfacing a COP framework with models of self-regulated learning for understanding teacher development (Kremer-Hayon & Tillema, 1999). On one hand, our findings clarify how teachers benefited from participating in a collaborative learning community. For example, teachers profited from opportunities to share ideas with colleagues and to problem solve challenges (Englert & Tarrant, 1995; Perry et al., 1999). They valued the distributed expertise provided by various community members (i.e., colleagues and researchers). They emphasized the importance of observing authentic activity as a means for understanding instructional goals, especially when principles were situated in their own classrooms (Henry et al., 1999; Perry et al., 1999; Rennie, 2001). Teachers’ descriptions of valuable professional development activities mirrored recommendations from a COP framework. On the other hand, a model of self-regulated learning was useful for describing how teachers shifted practice adaptively to make meaningful changes in authentic activity. Teachers in this project enjoyed identifying best practices, enacting changes in their individual classrooms, with guidance, reflecting on outcomes, and adapting approaches (Henry et al., 1999; Palincsar et al., 1999; Perry et al., 1999). These self-regulated approaches to learning appeared to foster teachers’ (and researchers’) co/reconstruction of practical and formalized knowledge (e.g., Butler & Briard, 2000).

Thus, a contribution of the present research is its focus on the interface between social and the individual in accounting for learning in context. By examining teacher professional development across the 2 years of the project, we were able to describe how conceptual knowledge can be re-shaped within collaborative learning communities. More specifically, we showed how teachers’ self-regulated learning and reflection-on-action could be linked to reconstructed conceptual frameworks that emerged both within and between collaborations and with the purpose of reconstructing authentic activity within an existing professional community. Although more research is needed to document teachers’ on-line learning processes, in contrast to self-reported learning outcomes, this research underlines the value of coordinating constructivist, sociocultural, and situated theoretical perspectives to provide a richer account of learning (Barab & Duffy, 2000; Brown et al., 1989; Paris, Byrnes, & Paris, 2001; Vygotsky, 1978).

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