

A review of research on the impact of professional learning communities on teaching practice and student learning[☆]

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Received 7 October 2006; received in revised form 9 January 2007; accepted 10 January 2007

Abstract

After an overview of the characteristics of professional learning communities (PLCs), this manuscript presents a review of 10 American studies and one English study on the impact of PLCs on teaching practices and student learning. Although, few studies move beyond self-reports of positive impact, a small number of empirical studies explore the impact on teaching practice and student learning. The collective results of these studies suggest that well-developed PLCs have positive impact on both teaching practice and student achievement. Implications of this research and suggestions for next steps in the efforts to document the impact of PLCs on teaching and learning are included.

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Keywords: Professional development; School culture; Teaching practice; Student achievement; Teacher collaboration

1. Introduction

Over the past 20 yr there has been a paradigm shift gathering momentum with regard to the professional development of teachers. Fueled by the complexities of teaching and learning within a climate of increasing accountability, this reform moves professional development beyond merely supporting the acquisition of new knowledge and skills for teachers. In their article on policies that support professional development, Darling-Hammond and McLaughlin (1995) write, “The vision of

practice that underlies the nation’s reform agenda requires most teachers to rethink their own practice, to construct new classroom roles and expectations about student outcomes, and to teach in ways they have never taught before” (para 1). Darling Hammond and McLaughlin go on to note that helping teachers rethink practice necessitates professional development that involves teachers in the dual capacities of both teaching and learning and creates new visions of what, when, and how teachers should learn. This most recent model of professional development ultimately requires a fundamental change in the institutional structures that have governed schooling, as it has traditionally existed.

One model that has evolved as a way of supporting this paradigm change is that of professional learning communities (PLCs). Although, current professional development literature is replete with articles that

[☆]The preparation of this review was supported by the Lastinger Center for Learning at the University of Florida. An earlier version was presented at the National School Reform Research Forum, January 2006.

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extol the virtues of learning communities as an essential way to organize schools in order to maximize time spent in professional development (e.g. Bryk, Lee, & Holland, 1993; Louis & Marks, 1998), only recently has the focus of this literature shifted to examining empirically the changes in teachers' practices and students' learning as a result of PLCs. Although, teachers' perceptions about the value of PLCs are both valid and valuable, understanding the outcomes of these endeavors on teaching practice and student learning is crucial, particularly in today's era of scarce resources and accountability. With this in mind, the purpose of this manuscript is to provide a review of the research available on the impact of PLCs on teaching practices and student learning. In an attempt to create a comprehensive picture we first provide an overview of the essential characteristics of PLCs. After developing this foundation, we examine the current literature as it relates to two basic questions:

- In what ways does teaching practice change as a result of participation in a PLC? And, what aspects of the PLCs support these changes?
- Does the literature support the assumption that student learning increases when teachers participate in a PLC? And, what aspects of the PLCs support increased student learning?

We conclude with the implications of this research and suggestions for next steps in the efforts to document the impact of PLCs on teaching and learning.

2. Essential characteristics of professional learning communities

The concept of a PLC is based on a premise from the business sector regarding the capacity of organizations to learn. Modified to fit the world of education, the concept of a learning organization became that of a learning community that would strive to develop collaborative work cultures for teachers (Thompson, Gregg, & Niska, 2004). Learning communities are grounded in two assumptions. First, it is assumed that knowledge is situated in the day-to-day lived experiences of teachers and best understood through critical reflection with others who share the same experience (Buysse, Sparkman, & Wesley, 2003). Second, it is assumed that actively engaging teachers in PLCs will increase

their professional knowledge and enhance student learning.

Schools interested in implementing this reform began to shift the organization and structure of their professional development efforts toward integrating teacher learning into communities of practice with the goal of meeting the educational needs of their students through collaboratively examining their day-to-day practice. Newmann et al. (1996) describe five essential characteristics of PLCs. First, shared values and norms must be developed with regard to such issues as the group's collective "views about children and children's ability to learn, school priorities for the use of time and space, and the proper roles of parents, teachers, and administrators" (p. 181). A second essential characteristic is a clear and consistent focus on student learning (p. 182). DuFour (2004) reiterates this notion when he writes that the mission "is not simply to ensure that students are taught but to ensure that they learn. This simple shift—from a focus on teaching to a focus on learning—has profound implications" (para 5). The third characteristic is reflective dialogue that leads to "extensive and continuing conversations among teachers about curriculum, instruction, and student development" (Newmann et al., 1996, p. 182). Deprivatizing practice to make teaching public and focusing on collaboration are the last two characteristics of a PLC (Newmann et al., 1996). Although expressed slightly differently, these five characteristics (along with three additional characteristics) were confirmed as critical to PLCs in a large-scale, multi-site study of professional learning in England (Bolam, McMahon, Stoll, Thomas, & Wallace, 2005). Bolam et al. (2005) synthesize these characteristics to define a PLC as a community "with the capacity to promote and sustain the learning of all professionals in the school community with the collective purpose of enhancing student learning" (p. 145).¹

The trend toward establishing PLCs in schools has not been without its struggles. DuFour (2004)

¹Although beyond the scope of this review, it is important to note that PLC reform is almost exclusively described as a school-based reform. Even when implemented across a number of schools or a whole district, there is little or no discussion of parallel district level reforms consistent with PLC principles. Our experience in establishing PLCs suggests the reforms are fragile when district actions undermine PLC principles. Broadening the PLC framework to include district level principles will be an important next step in the conceptualization of the framework.

laments the fact that all combinations of individuals with any interest in schools are now calling themselves PLCs. Everyone from grade level teams to state departments of education is framing their work in terms of PLCs. Yet, using the term PLC does not demonstrate that a learning community does, in fact, exist. DuFour (2004) cautions, “the term has been used so ubiquitously that it is in danger of losing all meaning” (para 2). In order to prevent the PLC model from the same dismal fate as other well intentioned reform efforts, DuFour (2004) recommends that educators continually reflect on the ways they are working to embed student learning and teacher collaboration into the culture of the schools. Ultimately, however, educators must critically examine the results of their efforts in terms of student achievement. To demonstrate results, PLCs must be able to articulate their outcomes in terms of data that indicate changed teaching practices and improved student learning, something they have not yet established as common practice. With these two outcomes as our focus, we now turn to an examination of the empirical literature that attempts to document these vital results.

3. Parameters for the review of the research

The studies for our review come from two key sources. First, we searched the US research and publications links on the websites of organizations that are at the forefront of work with school-based learning communities. Specifically, we searched the websites of the Annenberg Institute for School Reform, the National School Reform Faculty, the Coalition of Essential Schools, and the Wisconsin Center for Education Research. Our second source of literature comes from searches on both ERIC and EBSCO databases for articles published between 1990 and 2005. Because of the nebulous terminology associated with PLCs, several search terms were used. These included the following: PLCs, teacher community, teachers and learning communities, critical friends groups, communities of practice, and then communities of practice with qualifiers that included: and teachers, and schools, and student achievement. The results of this search, although by no means exhaustive, produced 55 books, papers, and articles that included some efforts to connect learning communities with teaching practice and/or student achievement. In selecting material for this literature review, we decided to

limit the review to published articles or book chapters that included data about the impact of school-based PLCs on teaching practice and/or student learning. Using these parameters the search provided only 10 empirical studies of the work of teachers in learning communities. In addition, we decided to include one large multi-site research report commissioned and published by the General Teaching Council of England, Department for Education and Skills. Although not refereed and published in an edited journal, this report conducted by faculty at the Universities of Bristol, Bath and London has been vetted and published by the Department for Education and Skills in England. These 11 studies are the focus of our analysis. The other 44 books or articles provided non-empirical descriptions of existing programmes, reported self-reflective accounts of teachers’ participation, were empirical but unpublished (e.g. papers presented at conferences or dissertations), or were empirical but did not document the essential characteristics of a PLC previously mentioned. These documents were used only as additional support for a comprehensive picture of PLCs.

The 11 primary sources used for our review can be grouped into two broad categories that correspond to the original questions we asked in our introduction. In addition, these 11 sources all described efforts by schools that either explicitly or implicitly demonstrated the five essential characteristics of a PLC previously discussed. When looking across these studies, all attempted to make connections between learning communities and the classroom practices of teachers. Drawing on these sources we provide a synthesis of the research on how teaching practices or student achievement change due to teachers’ participation in a learning community and what aspects of the learning community support these changes. Additionally, eight of the 11 studies attempted to add the element of student achievement data to their results. How the researchers accomplished this varied from using standardized test results to reporting interview data about achievement.

4. Professional learning communities and teaching practice

At its core, the concept of a PLC rests on the premise of improving student learning by improving teaching practice. As a result it is important to look across the reviewed studies to discern the connections

between participation in a learning community and teachers' classroom practices. As a way of organizing this part of our review, we will focus on our guiding questions: In what ways does teaching practice change as a result of participation in a PLC? And, what aspects of the PLC support these changes?

In a general sense, all 11 research articles used in this analysis supported the idea that participation in a learning community leads to changes in teaching practice. Because of this, it is imperative that we look more specifically at what the research conveys about how teaching practice is changed. Analyzing the literature for these specific changes was a relatively elusive activity; however, as only five studies (Dunne, Nave, & Lewis, 2000; Englert & Tarrant, 1995; Hollins, McIntyre, DeBose, Hollins, & Towner, 2004; Louis & Marks, 1998; Strahan, 2003) mentioned specific changes teachers made in their classrooms. One of these articles (Dunne et al., 2000) documented the findings of a 2-year study on critical friends groups commissioned by the Annenberg Institute for School Reform. In this study, the researchers used interview and observation data to compare the practices of non-participants to the practices of teachers who participated in critical friends groups. The authors concluded that the practices of participants became more student-centered over time. The authors state that participants increased the use of techniques such as added flexibility of classroom arrangements and changes in the pace of instruction to accommodate for varying levels of student content mastery. However, the researchers did not provide data about practices at the beginning of the study, which decreases the power of the reported findings. Englert and Tarrant (1995) studied changes in practice for three teachers within a learning community. One teacher in particular made substantive changes in her practice. Prior to her work with the learning community this teacher's literacy instructional practices "consisted of discrete skill sheets or tasks that required students to read or write isolated words and sentences" (p. 327). Through participation in the community this teacher implemented changes such as developing an author's center with mixed age groups, implementing a new group story format, and utilizing choral reading strategies.

In the study by Hollins et al. (2004), although initial teaching practices were not specifically described, the authors talked about how early meetings of the 12 participating teachers focused

primarily on the challenges of trying to teach low achieving African-American students successfully. They noted that by the tenth meeting, the teachers had shifted to a more strategic focus as they designed a new "approach to language arts instruction that involved letter writing, a poetry project and class books, and employed the writing process" (p. 258). As a part of this process teachers used strategies that included, "visualization techniques" to help children understand their reading, manipulation of site words using flash cards, and different strategies for having the children change words to make new ones (p. 259).

Using a combined quantitative/qualitative design Louis and Marks (1998) conducted a multi-site study of the impact of PLCs. These researchers focused on eight elementary schools, eight middle schools and eight high schools (24 total). The studied schools were a nationally selected sample of restructuring schools. These researchers looked at both pedagogy and the social structure of the classrooms in examining teaching practice. In particular, through classroom observations and interviews with teachers they documented the presence of the structural support for and the characteristics of authentic pedagogy, a term that is defined in their study. Briefly, authentic pedagogy emphasizes higher order thinking, the construction of meaning through conversation, and the development of depth of knowledge that has value beyond the classroom. These researchers examine the connection between the quality of classroom pedagogy and the existence of the core characteristics of PLC. Louis and Marks (1998) documented that the presence of professional community in a school contributes to higher levels of social support for achievement and higher levels of authentic pedagogy. In fact, they note that their model accounts for 36% of the variance in the quality of classroom pedagogy providing robust support to demonstrate the impact of PLC on classroom practice.

A final example comes from one of Strahan's (2003) case studies of an elementary school where all of the teachers participated in efforts to improve student achievement in reading. This case study does not document specific teaching practices prior to the attempted changes, but it does provide interview data from the principal regarding the initially negative attitudes of the teachers toward student learning. As a part of the change process teachers worked collaboratively to develop a shared school mission around four guiding values that

included integrity, respect, discipline, and excellence (p. 133). The author concluded that this led to the development of stronger instructional norms and made the teachers receptive to working with a curriculum facilitator in the areas of changing practices for guided reading, writing, and self-selected reading.

The other seven studies we reviewed did not provide significant detail on the changes made to teachers' practices; instead change was alluded to without explicit documentation or detail. For example, Andrews and Lewis (2002) indicated that teachers who participated in a learning community known as Innovative Design for Enhancing Achievement in Schools (IDEAS) reported changes in their practices. The authors provided several direct quotes to support these claims. The following quote is representative, "I find that my teaching has improved, I find that I understand more about what I'm doing, why I'm doing things, and I find that's been an improvement" (p. 246). Note that although the researchers provided a teacher's self-reported data that indicated change in practice, the teacher provided no specific information about the nature of changes in practice or thinking. This general trend was pervasive in the research studies, whether included in or excluded from this literature review. Instead of descriptions of specific changes in pedagogy, the researchers reported that teachers perceived their practices had changed. What the researchers typically provided was more specific information on how the teaching culture changed as a result of teachers' participation in a PLC.

5. Professional learning communities and school culture

Although many of the 11 studies failed to describe specific changes in pedagogy, change in the professional culture of a school is a significant finding because it demonstrates that establishing a PLC contributes to a fundamental shift in the habits of mind that teachers bring to their daily work in the classroom. All 11 of the studies cited empirical data suggesting a change in the professional culture of the school had occurred. Six of the studies drew upon quotes from participants to document this finding (Andrews & Lewis, 2002; Berry, Johnson, & Montgomery, 2005; Englert & Tarrant, 1995; Hollins et al., 2004; Phillips, 2003; Strahan, 2003). Three of the studies used survey data that compared participants to non-participants (Dunne et al., 2000;

Supovitz, 2002; Supovitz & Christman, 2003); one drew on both interview quotes and survey data to document three different levels of implementation of a PLC and to report teachers' perceptions about how the level of participation in PLCs was impacting their work environment (Bolam et al., 2005); and one used survey data to document the differences in core characteristics of PLC across schools (Louis & Marks, 1998).

Looking across our sample, there seemed to be characteristics inherent in learning communities that worked to promote changes in teaching cultures. These can be broadly organized into four categories that include: collaboration, a focus on student learning, teacher authority, and continuous teacher learning. It is important to note that even as we attempt to compartmentalize the processes that are integral to the goals of PLC, we recognize the complexity of this process as it plays out in different lived contexts. For the purposes of our review we are pulling out aspects of these 11 studies and putting them into discrete categories, however, in reality there is a multifaceted interweaving of how these factors come together to change teaching cultures. Unfortunately, our only avenue for analysis lies in the less than desirable actions of simplifying and compartmentalizing what is actually complex and contextual.

5.1. Collaboration

We first turn our attention to elements of collaboration that promote changes in teaching cultures. In general, the research tells us that successful collaborative efforts include strategies that "open" practice in ways that encourage sharing, reflecting, and taking the risks necessary to change. For example, Louis and Marks (1998) created a "professional community index" that demonstrated that effective PLCs included both collaborative activity and the deprivatization of practice. Despite a relatively vague description of their methodology, Berry et al. (2005) reported that a learning community structure helped teachers in a rural elementary school examine their practice through such collaborative structures as sharing lessons, using protocols for decision making, and relying on systematic note taking to inform colleagues about their work. In another example, Phillips (2003) drew on interviews with teachers in one middle school to report that funding from reform initiatives allowed the teachers to collaborate in

ways that included observing each other in the classroom, videotaping and reviewing lessons, investigating teaching problems and collectively generating new ideas for practice, engaging in literature study circles, and participating in critical friends groups. In the most comprehensive study of PLCs, Bolam et al. (2005) examined survey data from 393 schools that included early childhood, elementary and secondary schools and interview-based case study data from 16 school sites. Both survey and case study data suggest a positive impact on teaching practice and morale as a result of participation in collaborative activities. Across the reviewed studies, teachers reported an increase in collaboration as they worked in learning communities. This type of change in teacher culture, which has traditionally been described as isolationist, seems likely to lead to fundamental shifts in the way that teachers approach their work.

5.2. *A focus on student learning*

Each of the studies reported above focuses on the significance and nature of teacher collaboration. It is equally important to note that most of the studies document the specific focus of the teachers' collaborative efforts (Berry et al., 2005; Bolam et al., 2005; Dunne et al., 2000; Englert & Tarrant, 1995; Hollins et al., 2004; Louis & Marks, 1998; Phillips, 2003; Strahan, 2003; Supovitz, 2002; Supovitz & Christman, 2003). In the middle school case study of teachers collaborating to create innovative curriculum, the goal of the teachers' work was to improve learning for low and under-achieving students (Phillips, 2003). The teachers in studies by Strahan (2003), Hollins et al. (2004), and Englert and Tarrant (1995) all had an underlying focus of improving student literacy. Bolam et al. (2005) found that in effective PLCs the "pupil learning was the foremost concern" (p. 146) and that PLCs at higher levels of development had stronger linkages between student achievement and teachers' professional learning. Similarly, two overlapping studies (Supovitz, 2002; Supovitz & Christman, 2003) powerfully demonstrated the importance of focus in teachers' collaborative actions. In their report about reform efforts in both Cincinnati and Philadelphia, the authors state that teachers who participated on teams or in small communities that focused on instructional practice reported changes in instructional culture. The teachers who reported that they did not use

designated meeting times to focus on teaching practice did not report changes in the instructional culture. These findings reinforce the importance of persistently pursuing an instructional focus as teachers engage in their work in learning communities.

5.3. *Teacher authority*

Another element of a PLC that helps to foster changes in teaching cultures is teacher authority. By teacher authority we mean the ability of teachers to make decisions regarding both the processes of their learning communities and aspects of school governance. A specific example demonstrating the importance of teacher authority in the overall success of a learning community came in a case study reported by Englert and Tarrant (1995). In this collaborative endeavor between three special education teachers and seven university researchers to provide "meaningful and beneficial" (p. 325) literacy instruction for students with mild disabilities, the researchers encouraged the teachers to take control of the curriculum. "Teachers were given leadership in their choices about curriculum development, so that the power over the topics and change agenda might be shaped by the teachers' concerns, interests, and questions" (p. 327). In the end, at least one teacher noted the significance of being given this authority when she spoke of how it transformed her sense of ownership over the curriculum.

At the beginning, I didn't like that [parity] at all. I wanted Carol Sue to say, "Try this," and "Do this." And there was none of that.... Now I can see why that was a really good way of doing that because I feel that I've [speaker's emphasis] done it, as opposed to taking somebody else's [ideas]. Even though I've used hundreds of other people's ideas and so forth, it's still mine, you know (p. 335).

In a second example, Supovitz (2002) reported survey data comparing team-based and non-team-based teachers' perceptions of school culture on 33 items that were grouped into five key indicators of school culture. He found "strong and persistent evidence" that team-based teachers "felt more involved in a variety of school-related decisions" (p. 1604). He concluded that giving teachers the power to be decision makers in their own learning process was essential to improving students' learning. Finally, case study data from Bolam et al.

(2005) demonstrated that the mobilization of leadership within strong PLCs enabled faculties and administrators to develop innovative strategies for use of financial and personnel resources to increase student learning and the strength of the professional learning context.

5.4. Continuous teacher learning

The final element of PLCs that supports overall changes in teaching cultures is that of continuous teacher learning. Participation in learning communities facilitates professional development that is driven by the needs of teachers as they are naturally engaged in efforts to accomplish their goals. The importance of continuous teacher learning was supported throughout the reviewed literature (Berry et al., 2005; Bolam et al., 2005; Englert and Tarrant, 1995; Hollins et al., 2004; Phillips, 2003; Supovitz, 2002). More specifically, Hollins et al. (2004) documented that teachers involved in efforts to improve literacy in African-American students sought out scholarly literature on culturally relevant teaching. Berry et al. (2005) reported that teachers in one learning community searched for outside ideas to help them solve their teaching dilemmas. Bolam et al. (2005) indicated teachers saw a clear connection between their own professional learning opportunities within the PLC and changes in their practices and student learning. And in a final example, Englert and Tarrant (1995) noted that researchers brought new ideas and strategies rooted in scholarly literature to three special education teachers attempting to change their reading instruction for students with mild disabilities.

6. Professional learning communities and student achievement

The literature provides modest evidence that PLCs impact teaching. What, however, does the evidence tell us about the effects on students? In an educational climate that is increasingly directed by the demands of accountability, the viability of PLCs will be determined by their success in enhancing student achievement. This makes it incumbent upon educators to demonstrate how their work in learning communities improves student learning. Of the 11 studies reviewed for this analysis, eight attempted to make those connections.

6.1. Evidence of increases in student achievement

All eight studies (Berry et al., 2005; Bolam et al., 2005; Hollins et al., 2004; Louis & Marks, 1998; Phillips, 2003; Strahan, 2003; Supovitz, 2002; Supovitz & Christman, 2003) that examined the relationship between teachers' participation in PLCs and student achievement found that student learning improved. Berry et al. (2005) documented the progress of a rural elementary school over a 4-year period. During this time, the results of grade level testing indicated that students improved from struggling—with slightly more than 50% performing at or above grade level—to improving rapidly with more than 80% of students meeting grade level standards. In a case study documenting the efforts of a middle school faculty engaged in learning community efforts to target low and underachieving students, Phillips (2003) reported that achievement scores increased dramatically over a 3-year period (p. 256). More specifically, in this middle school, ratings on a state-wide standardized test went from acceptable in 1999–2000 with 50% of the students passing subject area tests in reading, writing, math, science, and social studies, to exemplary in 2001–2002 with over 90% of the students passing each subject area test. In Strahan's (2003) account of three struggling elementary schools over a 3-year period, results also demonstrated dramatic improvement. In each of these schools student test scores on state achievement tests rose from 50% proficiency to more than 75%.

Results from the research conducted by Hollins et al. (2004) also document improvement in achievement. Hollins et al. (2004) report that at both levels assessed (second and third grade), struggling African-American students in the target school increased their achievement significantly more than comparable students in the district. For example they report:

In 1998, 45% of second graders [at the target school] scored above the 25th percentile as compared with 64% in 1999, and 73% in 2000. This is a 28% overall gain. District-wide, 48% of second graders scored above the 25th percentile in 1998, 61% in 1999 and 56% in 2000, an overall gain of 12% (p. 259).

Similar gains are reported for third graders. In addition, the percentage of students moving into the 50 percentile or higher in target schools exceeded district gains at both grade levels.

In their large-scale study conducted in England, Bolam et al. (2005) compared PLC characteristics of schools (as reported in school surveys) with student outcome data from a national pupil assessment database. Links between the strength of PLC characteristics and student achievement were statistically significant at both the primary and secondary levels. Although, the relationships were not robust the authors were encouraged to find clear positive relationships when they used value added measures (used to make comparisons between relative student progress in the PLC schools and that of students in the non-targeted schools). The authors concluded that, “the greater the extent of reported staff involvement in professional and pupil learning, the higher was the level of pupil performing and progress in both primary and secondary schools” (p. 132).

Finally, the studies conducted by Bolam et al. (2005), Louis and Marks (1998), Supovitz (2002), and Supovitz and Christman (2003) are particularly important in helping to discern the value of PLCs. In these studies, results of student achievement gains varied with the strength of the PLC in the school (Bolam et al., 2005; Louis & Marks, 1998) or with the specific focus of the efforts of teams or small communities of teachers (Supovitz, 2002; Supovitz & Christman, 2003). After adjusting for grade level and student background Louis and Marks (1998), found that student achievement was significantly higher in schools with the strongest PLCs. This effect was so strong that the strength of the PLC accounted for 85% of the variance in achievement in this study. In both sites studied by Supovitz (2002) and Supovitz and Christman (2003) “there was evidence to suggest that those communities that did engage in structured, sustained, and supported instructional discussions and that investigated the relationships between instructional practices and student work produce significant gains in student learning” (p. 5). It is important to note, however, that in the communities where teachers worked together but did not engage in structured work that was highly focused around student learning, similar gains were not evident.

Although few in number, the collective results of these studies offer an unequivocal answer to the question about whether the literature supports the assumption that student learning increases when teachers participate in PLCs. The answer is a resounding and encouraging yes.

6.2. *A focus on student learning is the key to increased achievement*

Inquiry about how learning communities produced the improvement in student learning is important to the continued and future work of educators. When analyzing these eight studies there seemed to be a common feature that facilitated success. This feature was a persistent focus on student learning and achievement by the teachers in the learning communities. All eight studies documented that the collaborative efforts of teachers were focused on meeting the learning needs of their students. In this section of our analysis we examine seven of the reviewed studies to highlight the significance of this common thread for the success of PLCs.

Initially, the work of Supovitz (2002) and Supovitz and Christman, (2003) demonstrated inconsistent student achievement results. As noted above, this occurred because there was not a uniform effort by teachers in teams or small communities to focus on student learning. In both of the sites where the research was conducted, the authors found evidence of improved achievement but only for students whose teachers worked in teams or communities that focused on instructional practices and how they impacted student learning. Berry et al. (2005) reported consistent improvement for students. In this study, the teachers worked in professional learning teams to develop instructional strategies that were based on student data and reinforced by professional literature, to lead to meaningful student achievement. Hollins et al. (2004) stressed the importance of a facilitator who helped teachers maintain a focus on the goal of improving literacy for African-American students during all group meetings. Additionally, the facilitator worked to ensure that the efforts of their collaborations were always rooted in improving test scores and other measures of student achievement. Similarly, Strahan (2003) noted that the reform efforts of the three elementary schools he studied were driven by data-directed dialogue. He explained that this meant teachers’ collaborative efforts were always focused on data about student learning and directed toward increasing that learning. Louis and Marks (1998) examined the nature of impact of PLC on pedagogy and achievement to conclude that the focus on the intellectual quality of student learning within PLCs boosts achievement because it pushes teachers toward the use of authentic

pedagogy. Finally, in the case study by Phillips (2003), interview data indicated that the teachers in this middle school continually analyzed data from each child to identify ways to affect his/her success both cognitively and affectively. Phillips concluded that the teachers “knew their students’ population well, and they deliberately created culturally relevant programs to make learning more meaningful” (p. 258). In the long run, the data across these studies indicated that a key element of successful PLCs is their pervasive attention to meeting the learning needs of their students.

7. Summary

The use of professional learning communities (PLCs) as a means to improve teaching practice and student achievement is a move that educators support and value, as indicated by teachers’ perceptions of impact as cited in this review. There is also some limited evidence that the impact is measurable beyond teacher perceptions. To summarize the findings across the reviewed literature in terms of our two initial research questions: (1) participation in learning communities impacts teaching practice as teachers become more student centered. In addition, teaching culture is improved because the learning communities increase collaboration, a focus on student learning, teacher authority or empowerment, and continuous learning; (2) when teachers participate in a learning community, students benefit as well, as indicated by improved achievement scores over time. All six studies reporting student learning outcomes indicated that an intense focus on student learning and achievement was the aspect of learning communities that impacted student learning. Together, these findings from the literature provide preliminary evidence of the benefit of learning communities for teachers and their students.

A final question we considered was whether these benefits could be the result of the Hawthorne Effect, that is, were the positive findings a result of the interest and involvement of the teachers in an innovation as opposed to a benefit specifically tied to participation in a PLC. The small number of studies makes it impossible to discount the possibility of the Hawthorne Effect, however, four of the studies report a differential impact on teaching practice or student learning as a result of participating in a PLC and therefore would contradict the Hawthorne Effect. Bolam et al. (2005) and Louis

and Marks (1998) found that higher student achievement was related to the extent that schools had strong professional communities. Supovitz and Christman (2003) and Supovitz (2002) found that measurable improvement in student achievement only occurred in PLCs that focused on changing the instructional practices of their teachers.

8. Conclusions

Reviewing literature is essentially an act of interpretation. That is, the reviewers elect which literature to include and which to exclude based upon the guiding questions for the review. Those decisions shape the conclusions from the review. In this review we have not reported the findings of the many reports that describe work within PLCs nor have we reported the results of reflective self-reports of the value of this work. In part, this is because we accept as valid and significant the perspectives of teachers and administrators that this work is valued and perceived positively (Bambino, 2002; Carver, 2004; Olson, 1998; Slick, 2002). Our focus in this review has been to look at the empirical literature on PLCs that might validate these perceptions. That is, we reviewed the empirical studies that connect PLCs with changes in teaching practices and student learning. This review is further limited by our decision to report only published or vetted research because the review process is a strategy for determining the quality of a research report. This focus clearly limited the scope of the review as few published studies have looked at the impact of PLCs on teacher practice or student learning. However, studies which have been done clearly demonstrate that a learning community model can have positive impact on both teachers and students. Just as important, our act of interpreting the literature has led us to draw conclusions that are significant to future research.

8.1. The focus of A PLC should be developing teachers’ “Knowledge Of Practice” around the issue of student learning

Traditional models of professional development have focused on providing teachers with the skills and knowledge necessary to be “better” educators. These models have typically been grounded in the assumption that the purpose of professional development is to convey to teachers “knowledge FOR practice” (Cochran-Smith & Lytle, 1999). That is,

the professional development activity is based on the premise that knowledge and expertise are best generated by university researchers outside of the day-to-day work of teaching. Through professional development, teachers acquire and then implement this knowledge. In addition, the knowledge presented is usually advocated as a prescription for better teaching. The PLCs model represents a fundamental shift away from this traditional model of professional development. PLCs at their best are grounded in generation of “knowledge OF Practice” (Cochran-Smith & Lytle, 1999). That is, “it is assumed that the knowledge teachers need to teach well is generated when teachers treat their own classrooms and schools as sites for intentional investigation at the same time that they treat the knowledge and theory produced by others as generative material for interrogation and interpretation” (p. 272).

PLCs honor both the knowledge and experience of teachers and knowledge and theory generated by other researchers. Through collaborative inquiry, teachers explore new ideas, current practice, and evidence of student learning using processes that respect them as the experts on what is needed to improve their own practice and increase student learning. Learning communities are not a prescriptive, one-size fits all approach. However, learning communities also cannot be insular, focused only on making explicit the practical wisdom teachers already possess about teaching. Instead learning communities should support teachers in making decisions based on their contexts, their goals, current and new professional knowledge, and the needs of their students.

In a research study that analyzed teachers’ representations of classroom practices, Little (2003) cautioned against the limited nature of teacher-led collaborative groups. After analyzing the language of teachers in a high school math and English department, she warned that teaching communities could be limited by their own “horizons of observation” (p. 917). She defined this term as, “the extent to which elements of a work environment are available as a learning context” (p. 917). She then used transcripts of meetings to analyze the discourse of teachers engaged in a learning community to improve instructional practices. Her main point was that teachers construct visions of teaching and learning based on a picture that is structured by their very positions as teachers. This can create paradigms of thinking that privilege

certain voices and epistemologies based on preconceived notions of right, wrong, good, or bad in schooling. In the end, this horizon of observation can serve to limit the solutions teachers develop to improve their own practices or improve student learning.

This can also be true for university-based educators, particularly those who work closely and extensively with schools. As educators, our visions are limited by our lifetimes spent within education and Little (2003) makes a strong argument for taking steps to ensure that teachers working in PLCs broaden the scope of their inquiry to problematize any and all aspects of the learning environment as appropriate. That is, as educators at all levels engage in the work of improving teaching and learning it is important that we seek external perspectives from other constituents (e.g. families, citizens, educators working outside our immediate environment, educational research, sociological research) so that all aspects of our practice be can be interrogated as an integral part of our efforts.

Although, it is important for researchers and teachers involved in the work of PLCs to keep Little’s (2003) caveat in mind, the reviewed studies clearly show this model is working to shift teachers’ habits of mind and create cultures of teaching that engage educators in enhancing teacher and student learning. Additionally, in those studies where the work of PLCs is linked to student achievement, the research clearly demonstrated a strong positive connection. In each of these cases the key was collaboration with a clear and persistent focus on data about student learning. This finding is consistent with the findings of other researchers who have reviewed literature about the importance of a focus on student learning and the analysis of student work (Guskey, 1997; Little, Gearhart, Curry, & Kafka, 2003). The studies in our sample documented changes in student achievement over time, in some cases up to 5 yr. What these studies show is that working collaboratively is the process not the goal of a PLC. The goal is enhanced student achievement.

8.2. Additional and rigorous research documenting the impact on teaching practice and student achievement is imperative

A great deal of the writing about PLCs describes the work of these communities and/or reports teachers’ perceptions of the value of this work.

Teachers working within PLCs need to develop collaborative relationships with researchers to help document the impact of their efforts. Although, the number of studies reviewed here was not high, what we found was encouraging. Clearly future research must continue building evidence that supports the impact of PLCs on teaching practice and achievement.

The studies that formed the basis of this analysis were mainly qualitative, although some of them added quantitative data in the form of survey results or students' standardized test results. Two provided more robust quantitative analysis of survey and achievement data (Bolam et al., 2005; Louis & Marks, 1998). Most of the qualitative data reported in these studies were from interviews, observations, field notes, and meeting transcriptions that were then reported in a case study format. Further research should draw broadly across various methodologies to document the creation of PLCs and their impact. The following kinds of studies are needed:

- Quantitative studies that document changes in teachers' perceptions of the professional culture of the school.
- Longitudinal observational studies (both quantitative and qualitative) that document changes in teaching practice as teachers work in PLCs.
- In-depth case studies of changes in teaching practice and student achievement for sample teachers working in PLCs.
- Qualitative documentation of the nature of the work teachers do as they analyze student work and how this changes over time.
- In-depth case studies of changes in student learning for sample students in classrooms of teachers working in PLCs.
- Quantitative documentation of changes in student achievement over time as teachers engage in work in PLCs.

Although, the analysis of data about student achievement is time-consuming, it is essential in building the case that PLCs are powerful types of reform and with the current demands that schools collect and analyze evidence of student achievement; this analysis is less difficult than it once was. Many teachers and university collaborators note that achievement tests assess a narrow range of learning and may fail to capture the breadth of impact of a PLC. While we would not argue with the validity of

this observation, it cannot be used as a rationale for failing to collect evidence of the impact of this work on student achievement. Data from achievement tests can be supplemented with case studies that examine changes in student work over time. In fact, these kinds of cases studies done by individual teachers working within learning communities would create a powerful picture of impact. At this point, we do not have these case studies.

Additionally there are a couple of methodological issues researchers should consider. First, researchers should carefully report research methodology and data sources. In several of the reviewed studies, the description of methodology omitted important information (e.g. the number of teachers who participated in interviews, the nature of interview questions, the amount of interview data collected). Rigorous reporting of research methodology is essential if we are to build a credible justification for the resources necessary to sustain PLCs. And second, it is important to incorporate viable evaluation designs into our efforts. Seven of the 11 research studies used for this analysis are noteworthy because the evaluators were independent from those who facilitated the work of the PLC (Andrews & Lewis, 2002; Bolam et al., 2005; Dunne et al., 2000; Louis & Marks, 1998; Phillips, 2003; Supovitz, 2002; Supovitz & Christman, 2003). No matter how rigorous the methodology or how unbiased the report, research conducted by the facilitator will be suspect. To build a strong case, we must guard against the danger of researching ourselves.² Conducting this research, like the work itself, will take time. Just as it is difficult to shift teachers' thinking to build collaborative cultures, it is difficult to capture the essence of this contextually driven process. The studies reviewed here provide a model for these efforts and a basis for suggesting improvements. They leave us hopeful that learning communities offer an avenue to build the momentum of a shifting paradigm in the professional development of teachers and the learning of students.

²This particular recommendation is easy to make but very difficult to operationalize. University faculty must publish. As a result, those of us interested in working with schools find it essential to research our own efforts to meet the requirements for tenure and promotion. If external researchers are hired to document and publish the work of PLCs, this could leave facilitators with few incentives to engage in the work. Probing this dilemma is beyond the scope of this paper, however, this problem deserves attention.

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