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**Professional Learning Communities:
Key Themes from the Literature**

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Introduction

Over the past twenty-five years, the educational literature has devoted considerable attention to the topic of professional learning communities (PLCs). Across the country, school districts from Maine to California are adopting PLCs as a strategy to increase student achievement by creating a collaborative school culture focused on learning. Proponents of reform and professional organizations have endorsed the concept of PLCs. For example, the National Staff Development Council (2001) has included learning communities as one of the organization's Standards for Staff Development suggesting that PLCs are recognized as a strategy for school improvement, specifically professional development.

A search of the literature on PLCs reveals a broad range of publications from guidelines for organizing PLCs, to research on their implementation. However, rigorous research and evaluation studies of PLCs are limited in number. Much of the practitioner literature on PLCs has described the processes and stages that occur along their developmental trajectory. As learning communities evolve as a strategy for professional development on a larger scale, there is a small but emerging literature that looks critically at PLC models and their impact on teaching practice and student learning. Collectively, the literature on PLCs is a rich and promising body of work that offers valuable opportunities for further exploration.

Methodology

The Education Alliance at Brown University, working in partnership with Hezel Associates, produced this literature review on professional learning communities to serve as resource to the PBS Peer Connections Design Team. The Education Alliance offers the following scan and synthesis of key themes from the literature on PLCs that builds upon two prior documents analyzing key themes in the literature on instructional coaching, and mentoring. The purpose of this document is to leverage findings from the literature to guide the Peer Connections Design Team in extending PLCs by integrating technology, instructional coaching, and mentoring. To this end, the current review makes use of similar methods and research questions as previous reviews to provide a coherent approach for analyzing the literature on PLCs.

The following synthesis is more modest in scope than a comprehensive literature review. It addresses several salient questions about PLCs, looking across a variety of research studies and practitioner accounts. To gather literature for this review, The Education Alliance used key words to search electronic databases, specifically Academic Search Premier, ERIC, Digital Dissertations, WorldCat, and Google Scholar, as well as conducting archive searches of practitioner publications such as *Education Week*. Key words included:

- Professional learning communities /teachers
- Professional learning communities/district
- Professional learning communities /technology
- Professional learning communities /hobbyists

Once a preliminary set of articles was identified, the research team then read each article's reference list to identify additional citations of interest. The team additionally cross-checked journal articles and publications from resources such as the All Things PLC Web site (2008) (<http://www.allthingsplc.info/>), a Web site that provides research, articles, and data to schools and districts interested in practical knowledge and tools to create and sustain their PLCs. Finally, the researchers identified and collected additional resources from a variety of Web sites used by educators to develop and sustain teamwork and collaboration.

The evaluation team looked for a wide variety of research methodologies as well as descriptive accounts from practitioner journals, professional organizations, and district Web sites. The search strategies yielded more than 100 studies and reports. We have included 60 studies, reports, and district documents dealing with some aspect of professional learning communities.

To analyze the literature on professional learning communities, the evaluation team, with feedback from the PBS Design Team, framed a series of questions on various aspects of how PLC's develop and sustain their work. These questions guided both the analysis of the research and its presentation in this report. The questions are as follows:

- 1) What are the characteristics of professional learning communities? How are they structured? What activities do teachers in professional learning communities engage in?
- 2) What existing theories ground the activities of professional learning communities?
- 3) What kinds of experience and knowledge do professional learning communities bring to their work?
- 4) What issues/initiatives do they address?
- 5) What kinds of dilemmas and challenges do professional learning communities face?
- 6) What is known about technology use to facilitate work in professional learning communities for educators, other professions, and hobby communities?
- 7) What evidence, if any, is available about the effectiveness of professional learning communities for teacher professional development?
- 8) Are professional learning communities increasing or decreasing as a model of support for teachers?
- 9) What further studies of the topic are recommended? What makes them sustainable?
- 10) How do school/district administrators support the development of these communities?
- 11) What role, do school-based professional development providers play, if any, in professional learning communities?
- 12) Is funding an issue? What types of resources are needed?

The evaluation team integrated research studies to address these questions. In some cases, there was considerably less information available than with other questions. Where

appropriate a small number of education-related Web sites providing tools and services applicable to PLCs were integrated as well. A full list of these Web resources is located in Appendix A of this document. Finally, the review concludes by characterizing the current state of research on PLCs, and provides recommendations for additional research and development.

1. What are the characteristics of professional learning communities? How are they structured? What activities do teachers in professional learning communities engage in?

The educational literature has given considerable attention to defining the characteristics and structures of PLCs for school improvement. Hord (1997, 2003) notes that while the term *learning community* was becoming commonplace in education, the concept nevertheless took on different configurations when observed in local settings. In some contexts a learning community was viewed as extending classroom instruction beyond the school walls into the community, while in other instances it referred to interactions between students and teachers. As Hord explains, the concept is rooted in the work of organizational theorists such as Peter Senge (1990), who articulate a view of the workplace as a learning organization. Among the practices that define learning organizations are the active participation of employees in creating a shared vision and culture to support collaboration so that they can work together more effectively in identifying and resolving problems.

Translating the ideas of a learning organization from the world of business to a learning community in education, Hord refines a set of characteristics based on the work of Astuto (1994). Astuto and her colleagues studied the interactions of educators in schools where there was ongoing exchange around issues of teaching and learning to improve practice and student learning. Hord incorporates this concept as a defining characteristic of PLCs, so that not only the structures for group interaction were included, but emphasized the purposeful nature focusing on continuous inquiry and improvement. In framing the features that define a PLC Hord identifies the following characteristics:

- Supportive and shared leadership
- Shared values and vision
- Collective learning and the application of that learning
- Shared practice
- Supportive conditions for the maintenance of the learning community.

Stoll, Bolam, McMahon, Wallace, and Thomas (2006) confirm these characteristics of PLCs in a recent review of the literature, and identify three other characteristics as significant: mutual trust, inclusive school-wide membership, and networks and partnerships that look beyond the school for sources of learning. In the school reform literature, Little (1993), Kruse, Louis, and Bryk (1995), and McLaughlin (2001) also mention many of the same characteristics referenced by Hord and Stoll et al., but add reflective dialogue, de-privatization of practice, professional growth and mutual support and mutual obligation as other important themes for developing PLCs focused on school improvement.

Similarly to defining characteristics of PLCs, DuFour (2004) identifies three “big ideas” to guide the work of professional learning communities:

- A focus on learning
- A culture of collaboration
- A focus on results.

DuFour states that powerful professional learning is embedded in the routine practices of the school when teachers are organized into teams, provided time to meet during the school day, and given specific guidelines for engaging in activities that focus on student achievement. According to DuFour, a teams’ dialogue should center on these three critical questions, related to her big ideas:

- *What is it we want our students to learn?*
- *How will we know when each student has learned it?*
- *How can we improve on current levels of student achievement?*

More than simply providing a sense of camaraderie, DuFour notes that the process of collaboration should be developed to impact professional practice. According to DuFour, the effectiveness of the collaborative process should be assessed on results rather than perceptions, or positive intentions. Therefore PLCs should identify and pursue measurable, result-oriented goals and evaluate their success in meeting these goals through evidence of student achievement.

Referencing DuFour’s principles as the foundation for implementing PLCs, Graham (2007), a school administrator, describes how conversation, contention, and commitment all play an important role. He explains that conversations lay the groundwork for organizational learning. Moreover, contention exposes differences of opinion that when facilitated in team discussions, provide opportunities for growth, and finally commitment ensures a common understanding of purpose and values. Graham notes that PLCs meet during the school day, and are generally organized as specific teams, based on grade level, subject area, or some other topic of professional interest. Like other accounts of PLCs, Graham points out that the quality of the conversations that occur in the PLCs are dependent upon the development of supportive structures in which they take place.

Among the practices described in the literature on PLCs are examples of case-based inquiry and action research. Hiebert, Gallimore, and Stigler (2002) propose that professional knowledge for teaching must be storable and shareable as in other fields such as business, medicine and law, where case literature describes and reports on decisions in practice. The literature points to varied examples of how cases can be used to support the development of PLCs. Case-based inquiry has been used both on macro-organizational levels for facilitating discussions of district-wide reform (Hanna, 2006; Montgomery County Public Schools, 2008), and within schools to understand micro-organizational behavior of teacher teams engaged in lesson study (Shen, Zhen, & Poppink, 2007).

In exploring how learning communities operate at the district level the Annenberg Institute for School Reform (2004) describes their work with PLCs for the purpose of improving professional culture within a school district. They note that implementation of a district-wide approach has engaged educators at all levels in collective, consistent, and context-specific learning to address inequities, and improve results for all students. The authors provide evidence for the efficacy of PLCs in improving professional culture, and offer a detailed explanation of the activities of PLC's, and their development. They cite the importance of attending to issues of trust and equity, making work public, developing distributed leadership capacity, improving documentation, and ensuring focus on instruction.

An emphasis in the practitioner-oriented literature is the identification of specific PLC activities and milestones that characterize the development of learning communities. Grossman, Wineburg, & Woolworth (2001) identify four stages of community formation:

- 1) Formation of group identity and norms of interaction
- 2) Navigating fault lines
- 3) Negotiating essential tensions
- 4) Developing communal responsibility for individual growth.

Shen, Zhen, & Poppink (2007) confirm the stages of community formation identified by Grossman, et al., and describe how these steps informed school-based discussion of how PLCs develop, pilot and improve upon a common lesson plan.

While characteristics and activities of PLCs are described, the question of whether to mandate PLCs at the school or district level is not well defined in the literature. However, DuFour (2003) states that when professional learning communities are organized to ensure that all students learn at high levels, schools cannot allow teachers to opt out of participating. Additionally, a recent dissertation (Kline, 2007) presents a case study of three teacher communities of practice. While the PLC approach in this instance was not specifically mandated, the study suggests that perceptions of PLC's were viewed in a positive way when framed as voluntary rather than required activities.

2. What existing theories ground the activities of professional learning communities?

Underlying much of the PLC literature is the assumption that teaching remains a largely isolated profession, with few opportunities for teachers to learn together in the context of their work (Lortie, 1975, Little, 1990; Lieberman, 2000). Therefore, a shift in how teachers plan and carry out instruction must emerge in order to improve teaching practice and student learning over time. Likewise, much of the literature on PLCs is grounded in theories that highlight the social nature of learning and detail practices through which teachers share and build their work. Given the extensive literature on learning, this is appropriately narrowed to examine how communities and adults learn.

Theories of situated learning in *communities of practice* (Lave & Wenger, 1991) are frequently cited across the literature on PLCs. Lave and Wenger note an essential link

between learning and practice, and describe how this connection develops through social contexts that arise when work practice is shared and novices acquire the behaviors and practices of experts.

Research on communities of practice is cited as a primary source for designing online environments where social processes are viewed as constitutive of learning. Henri and Pudelko (2003) assert that Wenger's theory of communities of practice is at the heart of virtual communities. Collis and Margaryan (2004) reference learning communities as a key design approach in creating and sharing new knowledge among an online team in an international corporation. Kolikant (2004) describes how situated learning in a community of practice served as a model for designing a course in computer science. And Guldberg and Pilkington (2006), acknowledge communities of practice as a theoretical framework for their study of networked learning in online discussions of adult caregivers of patients with autistic spectrum disorder.

Galluci (2007) poses the question 'How do organizations learn?' which she addresses using socio-cultural theory to ground a case study. This study highlights the learning processes of a teacher and her colleagues engaging in a job-embedded professional development structure for planning and discussing instructional practice. The author recommends the use of Vygotskian theory to examine how individual appropriation of ideas and transformation of practice can become publicly shared and conventionalized, creating a culture of professional learning.

The term *work process knowledge* (Boreham, 2002) is defined as "the knowledge needed to work flexibly and in contexts where information and communications technology is used to facilitate networking and lateral communications" (p. 6). This knowledge in turn shapes the requirements for designing resources for workplace learning. In addition to identifying the knowledge needed for changing demands of work, Boreham notes that this perspective on practice also leads to "new ways of theorizing this knowledge" (p. 8).

As mentioned previously, the literature on PLCs also points to importance of workplace learning where learning takes place in the context of problem solving and occurs in both structured meetings and informal peer-to-peer interactions. Smith (2003) notes that the ubiquitous presence of technology builds opportunities for new modes and offers flexible delivery systems in the context of workplace learning.

In addition to communities of practice, Schmoker (2004) and the Annenberg Institute for School Reform (2004) note the relevance of *adult development* theory to inform the design of job-embedded professional development. The need for self-directed and problem-centered approaches is stressed for adult learning. Wood (2007) also cites the active participation of teachers in the development and sharing of knowledge in PLCs. She notes that collegial dialogue, provided by the PLC structure, is an opportunity to rekindle a "Deweyan approach" utilizing collective inquiry through systematic observation and analysis of classrooms as the basis of professional learning.

3. What kinds of experience and knowledge do professional learning communities bring to their work?

The Annenberg Institute for School Reform (2004) notes that PLC's promote a commitment to improve both individual content knowledge and professional practice among community members. School-based teams can include grade-level groups that focus on developing lesson plans and assessments, or multi-grade teams that collaborate on aligning curriculum and ensuring a coherent learning pathway across grade levels.

Richardson (2005) observes that school-based learning teams, described as groups of teachers who work together in an ongoing way, need to have the support of a principal to validate their work. High functioning school-based learning teams meet for at least an hour a week during the school day to examine student work and assessment results. Often, a facilitator will push the group to probe for explanations and identify priorities for improving instructional activities and set objectives for action. This notion is similar to DuFour's focus on student learning.

DuFour (2004) emphasizes that teachers need skills in examining and analyzing data for evidence-based decision-making. However, DuFour cautions that the narrow use of data does not necessarily translate into improved practice unless teachers also have access to comparative data and collegial support for review and analysis. DuFour concludes that the role of leadership is critical in creating the systems that embed collaboration in the routine practices of the school, along with the commitment of the staff to work closely and persist in their efforts together.

The National School Reform Faculty (2008), an organization devoted to developing collegial relationships and reflective practice among educators through a model called the Critical Friends Group (CFG). They note that a CFG is strong when the following characteristics are present:

- Openness to improvement
- Trust and respect
- A foundation in the knowledge and skills of teaching
- Supportive leadership
- Socialization and school structures that extend the school's mission

In addition to these indicators of successful Critical Friends Groups, relational and interpersonal skills such as managing conflict and building consensus are noted in the literature. Wood (2007), in her portrait of two teachers' learning communities, points to the importance of communication skills required for collaboration, such as facilitating meetings within a realistic time frame, and building shared norms and values for discussing teaching practice and student learning. She also mentions various tools for structuring conversations; these included protocols for looking at student work, analyzing dilemmas of practice, and assessing the value of lessons.

While similar to identifying the characteristics of PLCs, the first question covered in this review, describing what knowledge PLCs bring to their work is focused on relationships

that result in opportunities for learning. Knowledge of how to work collaboratively is a foundation for PLCs and with this knowledge the opportunities for building content knowledge proceeds.

4. What issues/initiatives do professional learning communities address?

Based on a review of the literature, the overarching issues and initiatives that PLCs address include: student learning and effective teaching, promoting equity and high expectations, building leadership capacity, development of shared norms and values, data-based decision making, collaborative planning, and curriculum development (DuFour, 2004; Wells & Feun, 2007).

In describing the issues undertaken by PLCs, the literature points not only to school-based examples, but also to district-wide initiatives. Wood (2007) presents a comparative case study from schools across a district describing how learning communities used meeting time to analyze student work based on standards, increase parent involvement, improve children's literacy, and address problems concerning student behavior and motivation.

Hollins, McIntyre, DeBose, Hollins, and Towner (2004) studied a self-sustaining learning community for teacher development to improve literacy acquisition and development of African-American children at an urban elementary school. The study presents a five-step problem solving process that teachers used to direct their work. The problem solving process included:

- 1) Delineating challenges
- 2) Identifying approaches for meeting challenges
- 3) Implementing selected approaches
- 4) Evaluating implementation
- 5) Formulating theory to guide future practices.

Researchers documented changes in the teachers' habits of mind and improved academic performance of the students as positive indicators for the potential usefulness of the school-based teacher development model. So were these steps useful/successful? This study suggests that PLCs address a wide array of challenges; however, it is the way in which these challenges are addressed that is characteristics of PLCs. Therefore, in this particular study, a key feature is the use of evaluating and collecting data on strategies.

5. What kinds of dilemmas and challenges do professional learning communities face?

Hollins, McIntyre, DeBose, Hollins, and Towner (2004) in their research of a school's efforts to create a self-sustaining learning community for teacher development note the multiple and competing demands for time on urban teachers and administrators. Stoll et al., (2006) offer additional examples of how school context can impact on teacher

learning. They reference research on school size showing that large schools often have more difficulties in developing a strong sense of group identification across the whole school, and note that improvement is also more challenging in secondary schools. In addition, factors such as location of school in a rural or isolated area, the climate of the student body, and history of the school can impact learning communities. Finally, external influences including the level of support from the community, policy decisions, and the availability of learning infrastructure such as access to university faculty and programs are cited as factors that can impact the work of professional learning communities.

A case study by Wells and Feun (2007) also illustrates a process of change and resistance in six high schools that were implementing professional learning communities. The researchers note that the initial difficulty in each school was in having teachers come together as a PLC. The study described how, prior to PLC implementation, teachers collaborated as they chose, and even in schools with a common curriculum, faculty exhibited high degree of autonomy in instruction. For example, teachers expressed concerns about developing common assessments, and found it difficult to negotiate individual differences in philosophy, style, and content for the assessments. In addition, the study showed that teachers were frustrated in functioning as a learning community because they were not trained to work together and had to engage in difficult conversations that disrupted the status quo of the school.

An additional study of high schools by McLaughlin and Talbert (2007) underscores the particular challenges presented in developing and supporting PLCs. Among these challenges are the complex organizational structures of high schools with department boundaries that limit school-wide learning communities, principals who function more as managers than as instructional leaders, and a culture of low expectations of students compounded by student disrespect for teachers. In three high schools with strongly performing PLCs researchers identified some specific practices as levers for change. The high schools that were successful moved toward a distributed rather than centralized leadership role, engaged students as part of governing committees, and developed communication across departments around common themes, such as inquiry.

Kennedy (2005) cites tensions inherent in continuing professional development models including communities where there are divergent views on individual versus collaborative endeavors related to accountability and transforming practice. Stoll et al. (2006) also point to an individuals' orientation to change and group dynamics as potential challenges for the development of professional learning communities. These studies point to examples of internal individual characteristics that surface as challenges in implementing a PLC.

In addition to the various research studies, a discussion of barriers to implementing PLCs was the topic of an online chat hosted by *Education Week*. Panelist, Anne Jolly (2007), a former teacher and author of a guide for facilitators of PLCs notes three things to consider:

- 1) Developing school policies and supports, such as a time and place for teachers to meet
- 2) Providing training to teachers so they can successfully engage in collaborative work
- 3) Gathering feedback from teachers on how they feel about PLCs and make sure there are incentives for teamwork.

Important to note in describing PLC challenges, is the issue of determining the impact of PLCs. Fullan (2006) asserts that there are many examples of PLCs that are implemented superficially, without an awareness of the depth that is needed for producing an impact on learning. He proposes that the effectiveness of PLCs should be judged on well they are able to create cultures of professional learning on a system scale. Similarly, Stoll et al. (2006) made note that researchers assume that PLCs are effective when these practices are observed, that these characteristics in and of themselves are used to denote a successful PLC. While confirming impact is not necessarily a challenge for PLCs to tackle, establishing positive impact of PLCs has potential to alleviate other challenges faced by PLCs.

6. What is known about technology use to facilitate the work of professional learning communities?

Technology as a tool to facilitate the work of PLCs is widely discussed in the literature. Lieberman (2000) notes how technology has changed the way people communicate, work and learn. She suggests that educators who participate in overlapping work groups organized through online educational reform networks have the capability to recreate the scholarship of teaching. Seen through this perspective, an online environment becomes an ideal vehicle for exchanging and connecting the expertise of members in particular communities of practice.

A specific case example of how technology can support the development of a learning community is MacIsaac (2000). This study describes an online resource for physics teachers where the group has multiple email lists for discussing high school physics, professional research into physics learning, and a discussion that focused on the design and construction of physics laboratory and demonstration apparatus. Here, the online environment provided an additional time and space for this community to learn and collaborate.

Dalgarno and Colgan (2007) describe an online learning community (Connect-ME) that was developed to support novice elementary teachers in mathematics. The researchers reported that the priorities and learning needs of teachers during pre-service included: discussion with experts on topics such as mathematics curriculum, technology integration, differentiating instruction, building understanding of mathematical concepts, a bank of challenging problems and lessons selected by an expert appropriate for the classroom, and the ability to share lesson plans and activities. The findings that emerged from this study expanded upon the preliminary list and suggest a need for alternative

forms of professional development that promoted ongoing interaction with colleagues and provided a sense of community. Teachers also cited the importance of having a skilled facilitator with a personal connection to the online community of practice.

The research of Henri and Pudelko (2003) provides a framework to analyze and evaluate activity and learning in virtual communities. Their work identifies four types of community: (1) a community of interest; (2) a goal-oriented community of interest; (3) a learner community; and (4) a community of practice. While a definition of each is not needed here, the key is that communities of practice are seen as developing among people who already share a common practice in their day-to-day lives, such as common working conditions. As the authors note, the challenge for the community then becomes to determine mutual concerns and approaches to enhance professional practice.

Extending beyond the field of education, Pitta and Fowler (2005) note how the design and application of online consumer communities provide a similar definition of communities of practice different from a community of interest as identified by Henri and Pudelko (2003). They define communities of interest as groups that share common interests or values, and in an online context they often build a repository of knowledge through archived discussion. Pitta and Fowler explain that a community of practice is informally bound by what they do and learn together through a shared practice. These researchers add that a community of practice produces a shared repertoire of resources, including routines and artifacts that are developed over time.

Several researchers make a note of the opportunity to build a scholarship of teaching in PLCs. Similar research conducted on learning communities in other fields includes hobby communities. Jeppesen and Frederiksen (2006) introduce the idea of “lead users” as innovators in a case study of computer controlled music instruments. The researchers note that hobbyist innovators who are frequently lead users and ahead of trends, often have significant incentives to solve a given problem, both in terms of peer recognition and signaling their own competence. Regarding educational development, the significance of this study lies in recognizing that people who use technologies have much to contribute to design and innovation, and PLCs might be offered to a community of potential innovators to assess their needs and use of tools and resources. Jeppesen and Frederiksen refer to relationships among users and “host organizations” which might also be considered as a way to develop a network for PLCs. The authors cite the advantages of reduced cost, user-to-user-assistance, and increased relevance in models that incorporate user innovation.

In the health-care field, Abidi, Cheah, and Curran (2005) report that leveraging clinical experiences and problem solving strategies of experts can provide actionable knowledge to assist novice clinicians. They suggest that a knowledge management methodology is needed in conjunction with the implementation of a technology-based network.

While there is great promise in the use of technology tools for PLCs, there are potential limitations and challenges to be addressed. Smith (2003) caution that in the workplace, learners often prefer a socially constructed context, and that in many situations they are

not typically self-directed or independent regarding priorities for education and training. Independence and self-direction are key components to the use of online learning communities. This research also reiterates the importance of socio-culturally based knowledge and the need for cognitive apprenticeship in shifting learning from an expert to a novice, where technology tools may not be as effective as in-person communication. The potential limitations and advancements of technology as a tool for PLCs suggest that a hybrid may be optimal, where PLCs utilize the benefits of both online and in-person learning opportunities.

7. What evidence, if any, is available about the effectiveness of professional learning communities for teacher professional development?

The literature evaluating the effectiveness of learning communities, while generally more descriptive than rigorous in its methods, provides insight in understanding how PLCs are implemented and possible outcomes. While case studies of individual groups are common in the literature, Fullan (2006) proposes that PLCs should be judged by their effectiveness at creating cultures of professional learning on a system-wide scale. That is, rather than effectiveness be determined by a list of characteristics, effectiveness should be determined by how a PLC impacts improvement in a particular school or district.

Vescio, Ross, and Adams (2008) examine the effectiveness of PLCs through a review of 11 studies focused on PLCs. Although they observe that “few studies move beyond self-reports of positive impact” (p. 80), based upon their analysis of the studies identified, the researchers found evidence of change in teaching practice. Also noted was that this change included “some limited evidence that the impact is measurable beyond teacher perceptions.” (p. 88). In conducting the review researchers found that the teaching culture and collaboration improved, and teachers became more focused on student learning than prior to implementation of PLCs. In addition, the six studies that included students’ learning outcomes reported improved achievement scores over time, suggesting that PLCs can have system-wide change.

Based on an examination of six high schools, Wells and Feun (2007) state that the results of their study suggest that change at the high school level was a slow process. PLCs faced both passive and vocal resistance to implementing change. However, Cohn and McCune (2007) offer evidence that high school faculty can come together as PLCs to address the improvement of teaching and learning. The conditions needed for this PLC included: leaders creating a shared sense of purpose for improvement of learning, teachers actively engaging in developing new structures which enabled them to collaborate both within and across departments, administrators focusing on instructional leadership, and differentiated support from the district, based on school needs.

A study conducted by Guldberg and Pilkington (2006) analyzed an online training course designed as a learning community for working adults enrolled in a university-based certificate program. The findings suggest that the students who participated in the online discussions were able to simultaneously engage as members of both online and workplace communities of practice. Through engaging in ongoing discussion,

participants negotiated boundaries for risk taking around issues and processes of inquiry that constituted different interests, agendas, expertise, and communities. The research points to the importance of the design and quality of mentoring and facilitation, and the relevance of varied patterns of interaction for group and individual learning. The authors found evidence of a shift in the discussion from the interpersonal to the inter-community overtime. This shift reflected ways in which the participants were learning to accommodate to commonly held values of a learning community. In addition through this networked learning opportunity, the group moved from basic sharing of experiences to a professional consensus of what constitutes a good practitioner. This study provides an example of the effectiveness of PLCs for professional development. As mentioned earlier, determining effectiveness of PLCs is a challenge given the collaborative structure of PLCs and the broad goals PLCs are tasked with.

8. Are professional learning communities increasing or decreasing in number as a model of support for teachers?

There is little research available from large-scale surveys or other methods to clearly address whether the numbers of PLCs are increasing or declining. There are, however, indicators that point to the growth of PLCs as a model of support for teachers. Schmoker (2004) cited a groundswell of researchers and educators who advocate for promoting the structures found in collaborative PLCs. Along with these experts, DuFour (2007) identifies widespread interest in instituting PLCs among professional groups and organizations. Examples include: National Council of Teachers of Mathematics, National Council of Teachers of English, National Science Teachers Association, National Association of Secondary School Principals, National Association of Elementary School Principals, National Middle School Association, National Commission on Teaching and America's Future, National Board of Professional Teaching Standards, and the National Staff Development Council.

Schmoker (2004) borrows Malcolm Gladwell's concept of a "tipping point" (2002), to herald the emergence of PLCs in contrast to large-scale models such as whole-school reform. While Schmoker acknowledged that PLCs have not yet reached critical mass, he notes the growth of teachers collaborating in planning and lesson study as indications of milestones toward learning communities. He states that "thousands of schools and even entire districts" have utilized a learning communities approach with positive results evident in teaching practice and student achievement.

Fullan (2006), reports that interest in learning communities has moved beyond the whisper of researchers to a growing movement among practitioners. However, Fullan cautions that the term has traveled faster than the concept, and that many schools have rallied around the banner of PLCs with only superficial implementation that show little effect on student achievement.

Richardson (2005) describes PLCs as a "craze sweeping the country," and she adds that a growing number of schools are making time available during the workday for teachers to meet in grade-level or content area teams. As Richardson notes, parents are also

becoming aware of PLCs because students often start school later in the day or leave earlier to accommodate meeting times.

The kinds of announcements and descriptions available on district Web sites also provide further evidence to strengthen the assertion that PLCs are increasing as a model of support. In California, Torrance Unified School District, announced implementation of a PLC model at the elementary schools (Torrance Unified School District, 2008), and notified parents of early dismissal times on days when PLCs meet. The Austin Independent School District in Austin, Texas announced PLCs as a professional development strategy to break patterns of isolation seen in typical secondary schools (Austin Independent School District, 2008). And finally, Durham Public Schools in Durham, North Carolina are beginning to implement PLCs district-wide, first through monthly trainings for department chairs, with full implementation of teams to take place in the next year (Durham Public Schools, 2008).

9. What further studies of the topic are recommended?

In a study conducted in the Netherlands, Kwakman (2003) explores the extent to which secondary teachers participated in various professional learning activities. Based on survey results, the study suggests that collaborative activities that include active feedback during classroom observations are low, while collaborative activities that involve mainly discussion and talking (e.g., professional reading and sharing ideas with colleagues) occurred more frequently. The author states that additional research is needed on teacher participation in PLCs if the activities undertaken are to have the desired results expected in the literature on best practice and reform.

At the conclusion of their research review on the impact of PLCs, Vescio et al, (2008) state, “Additional and rigorous research documenting the impact on teaching practice and student achievement is imperative.” (p. 89). They note that the studies included in their review were mainly qualitative, and advocate for research that includes: quantitative studies documenting changes in teachers’ perceptions of professional culture in the school, longitudinal observation studies documenting changes in teaching practice, in-depth case studies on teaching practice and student achievement, documentation of teachers’ practice in analyzing student work, and analysis of changes in student achievement as teachers participate in professional learning communities.

10. How do school/district administrators support the development of these communities?

Based on the literature reviewed for this document, active support for PLCs by school and district administrators appears mixed. Fullan (2006) asserts that PLCs are often viewed as short-term trends or innovative ideas rather than forms of long-term improvement. He notes that they tend to be implemented on an individual school-by-school basis rather than as a strategy for systematic change.

Wood (2007) in her examination of teachers' learning communities studied an urban school district where an innovative superintendent established learning communities as the infrastructure for teacher learning throughout the district. Even though the initiative established learning communities district-wide, over time changes in leadership and a new focus on testing cast doubt on the sustainability of PLCs.

In their study of professional learning in six middle schools Thompson, Gregg, and Niska (2004) articulated the critical role of the principal in driving the development of learning communities. Through interviews and surveys the researchers found that principals believed that as leaders in PLCs it was important to encourage teachers to pursue professional development as part of their job. One approach included the principal meeting with the teachers in small groups where discussion centered first on a book discussion of new ideas and strategies, and then how to apply what was learned into the classroom. Wells and Feun (2007) note that the administrators at the six high schools they interviewed for their study felt a need for grounding in the concepts underlying PLCs and an understanding of their role in leading change efforts at their schools.

Cautioning school and district leaders, DuFour (2007) observes that if administrators advocate for a learning communities approach, then they are obligated to create structures that make teacher collaboration meaningful. He underscores that leaders need to ensure the following guidelines are met:

- Teachers have time available to meet during the contractual day
- Clear priorities are drawn for teacher collaboration
- Teams have the appropriate knowledge base available to make decisions
- Training is provided and differentiated for teams
- Teams have access to templates and models to inform their work
- Clear expectations laid out for teams to use to assess the quality of their work.

Halverson (2007) suggests that professional community can serve as a means for strengthening ties between leadership and instruction in schools, and accordingly, school leaders can influence teaching practice through the artifacts they employ. He distinguishes three different types of artifacts commonly used:

- Locally designed artifacts (lesson plans and units)
- Artifacts received from the district or external sources (e.g., curriculum maps)
- Inherited artifacts (e.g., the academic calendar).

Halverson suggests that how school leaders sequence the use of these artifacts for instructional improvement activities can help develop professional community. These studies indicate that school and district administrators are important to the implementation of PLCs; however, a key component to this success is the process in which administrators support PLCs.

11. What role, do school-based professional development providers play, if any, in professional learning communities?

There is not a strong body of research that specifically addresses the role of school-based

professional development providers in PLCs. According to articles in practitioner journals, school-based professional developers, including coaches, lead teachers and other staff can play a variety of roles in working with PLCs.

Richard (2004) mentions that many in-house staff developers frequently assume the role of a facilitator to encourage and support teacher teams and learning communities. McLaughlin and Talbert (2007) note that high schools in San Francisco, California used external resources and supports as coordinators and trainers for PLC activities.

Montgomery County Public Schools in Montgomery, Maryland (Montgomery County Schools, 2008) have organized a Professional Learning Communities Institute (PLCI) designed to increase student achievement by building the capacity of participating schools' leadership team to work and plan for improvement. Teams are provided with structured professional development, ongoing support from the PLCI staff from the Office of Organizational Development.

12. Is funding an issue? What types of resources are needed?

A few sources of funding are noted in the literature. For example Wood (2007) mentions that a Lucent Technologies grant provided support for the work of the PLCs, including costs for training and meetings.

Smith and Tamez (2008) expand the description of the Alcatel-Lucent Foundation initiative, which provided funding and resources to several school districts to help transform their professional cultures through implementation of learning communities. Organized as "Lucent Learning Communities" the PLCs were piloted in four districts: Albuquerque, NM; Seattle, WA; Lancaster, PA and Broward County, FL. Based on the lessons learned through the work in those districts, three New Jersey districts: Edison, Plainfield, and Trenton, are currently involved in the Lucent Collaborative Learning Communities Initiative.

The Triangle High Five Partnership (2008), a public-private high school reform initiative designed to increase the number of graduates and reduce the dropout rate across five public school systems in North Carolina is a five-year, \$2.5 million project. The project has defined three key areas for working in high schools: enhancing instructional strategies, assisting with the redesign of school structures, and improving community support of families and schools. High Five is committed to supporting teachers, principals and central office staffs in their own school improvement efforts through regional collaboration. A notable strategy is working with educators to form PLCs. The regional partnership's funding comes from The News & Observer Publishing Company, Blue Cross and Blue Shield of North Carolina Foundation, SAS, Progress Energy and Capitol Broadcasting Company. The five Triangle public school systems participating in the program are: Chapel Hill-Carrboro, Durham County, Johnston County, Orange County and Wake County.

In addition to financial resources external support providers are referenced in the literature. McLaughlin and Talbert (2007) note that high schools that were successful in implementing PLCs gained support and momentum for their efforts from external reform organizations. In this case study of three schools the researchers identified the Coalition of Essential Schools, the Bay Area School Reform Collaborative, and Joint Ventures of Silicon Valley. These organizations provided a variety of supports from a school-site reform coordinator to summer institutes, and funding to pay for teacher training and meeting time.

Conclusion

Examination of the education research literature on PLCs revealed a broad range, type, and history of published articles and studies. However, the research on PLCs is limited and largely descriptive, involving case studies of individual programs *in situ*, observations, and interviews. Similarly, the literature from practitioner publications, while noting a research basis for the implementation of PLCs, focuses mainly on accounts of the processes and stages that occur along their developmental path.

Given that the research-to-practice link has become central to demonstrating the effectiveness of education programs, further research is recommended by many of the studies in this review. In addition, development of tools and resources for strengthening and supporting PLCs is clearly needed. Based on the literature consulted, the following recommendations for research and development are proposed.

Research: Further literature review or research on PLCs explicitly recommended or implicitly suggested by the literature includes:

- What constitutes supportive conditions for PLCs? This could include areas such as: policy, scheduling, building arrangements, psychological safety, and funding.
- How should PLCs be assessed and evaluated both in terms of function and outcomes? What distinguishes good practice from nominal implementation? This could include the development and validation of evaluation measures.
- What resources (case studies, protocols and other tools) are useful to PLCs at various stages of development?
- Identifying effective strategies for scaling up and PLCs including school networks and overlapping networks.
- Expanding state, district, and national research and development programs to support the implementation of PLCs.

Development: Additional development for PLCs suggested by the literature includes:

- Guides for effective use and facilitation of case studies and other tools such as protocols.
- Resources for forming, scaling up and sustaining learning networks.
- Processes to initiate and develop PLCs. This could include procedural tools for “forming” and “norming” their work.

- Development of networked communities as a larger framework of support for PLCs, (e.g., overarching communities of practice for implementing and sustaining PLCs).
- Developing and indexing case studies for varied circumstances, levels, and demographics.
- Development of case studies in significant numbers for analysis.
- Design of online professional development courses as learning communities.
- Providing opportunities for pre-service participation for both teachers and instructional leaders on PLCs.

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Appendix A **PLC related Web sites**

Professional Learning Communities and Resources

1. All Things PLC

URL - <http://www.allthingsplc.info/>

The All Things PLC Web site provides research, articles, data and tools to educators who seek information about Professional Learning Communities at Work. This information is provided so schools and districts have relevant, practical knowledge and tools as they create and sustain their Professional Learning Community. PLC practitioners Dr. Richard DuFour, Dr. Robert Eaker and Rebecca DuFour regularly contribute to the All Things PLC blog, as do their associates.

The Web site identifies the following goals:

- To provide up-to-date, timely and useful information to educators regarding Professional Learning Community concepts and practices.
- To provide educators with insights from leading practitioners through an interactive web log (blog).
- To provide research and articles about Professional Learning Community concepts.
- To provide information about schools that have successfully implemented the Professional Learning Communities at Work model.

Among its tools the website includes:

- Bibliography and links to articles, research, and stories submitted by PLC teams.
- Audio recordings of PLC panel presentations and discussions with experts and PLC teams.
- Video highlights from a series on PLC's presented by Richard DuFour, Robert Eaker, and Rebecca DuFour, with Dennis Sparks of the National Staff Development Council.
- A PLC locator, to contact team leaders in schools across the country to learn about strategies that have proved effective and how they can be implemented.

2. Tapped In

<http://tappedin.org/tappedin/>

Tapped In is a Web-based learning environment created by SRI International to transform teacher professional development for professional development providers and educators. Tapped In enables providers to offer high-quality online professional development experiences and support to more teachers cost-effectively. Through Tapped In, educators can extend their professional growth beyond courses or workshops with the online tools, resources, colleagues, and support they need to implement effective, classroom-centered learning activities.

Through Tapped In, organizations can develop, implement, and manage online courses, workshops, seminars, mentoring programs, and other collaborative activities that supplement, or function in lieu of, face-to-face activities. Tapped In experts work with organization staff to design and facilitate online activities that are motivating, standards based, and attuned to the learning styles and technical facility of participating teachers. We help organizations address the dual challenges of sustained follow-up support and scaling-up services to reach all who need them. Organizations also benefit from the resources and expertise of other tenant partners that participate in the Tapped In community.

Tapped In brings educators together both locally and worldwide to cultivate a community that supports each teacher as a professional. We build the capacity of teachers to support one another through peer networks supported by the Tapped In community. The Web site allows educators to:

- Plan and conduct learning projects with colleagues and students.
- Participate in or lead topical discussion and groups.
- Manage and attend online courses offered by TPD providers.
- Mentor other educators.
- Try out new ideas in a safe, supportive environment.

Resources, experts, mentors, and new colleagues are available. Collectively, these elements of Tapped In form a supportive, career-long online home for education professionals.

3. LearningTimes

URL - <http://www.learningtimes.org/index.php>

LearningTimes is an open community for education and training professionals. Members have free access to a wide range of opportunities to interact and network with peers from across the globe, both live online, asynchronously and face-to-face.

Member activities, event and services include:

- Live, interactive interviews with education thought leaders
- Live webcasts from conferences, colloquia & special events
- Professional Networking
- Member-directed surveys, polls, and referenda
- Best practice case studies
- Emergent knowledge sharing
- Online voice-based discussions & live debates
- International working groups, team activities, & member think tanks
- Showcase projects and paper presentations
- Education news, research & peer reviews
- Education market & trends analysis
- International coverage
- Research results dissemination
- Networked communities of practice

Members come from a wide variety of disciplines and professions within the world of education, including higher education and K-12 faculty, staff, and administration, educational and web publishing, local and national education departments and bodies, technology providers, corporate training, nonprofit learning consortia and associations, libraries, museums, tutoring, continuing and professional education, and public television. Among these groups, many members refer to themselves as students and lifelong learners.

4. Learning Communities Initiative

URL - http://www.olin.org/LCI/learning_communities.php

A consortium of 82 colleges and universities, the Ohio Learning Network (OLN) helps Ohioans gain more education, promotes using technology in teaching and learning, and builds Ohio's capacity and effectiveness through statewide, shared resources. There are 46 Communities funded by the OLN Learning Communities Initiative 2007-2008

In this partnership, OLN and five Regional Centers support communities of learners as they innovate, experiment, assess, embed, and share new and effective ways to use technology in teaching and learning. Regional Centers offer grants to learning communities in their regions, disseminate information and resources, network learners across campuses and disciplines, and examine the critical relationship between technology and increased learning.

5. Public Schools of North Carolina Professional Development

<http://www.ncpublicschools.org/profdev>

The mission of the Office of Professional Development is to provide leadership, technical assistance, resources and consultative services to the North Carolina public and charter schools with the goal of improving student learning and achievement through organizational development and professional learning. Based on research by the National Staff Development Council (NSDC), the State standards provide the vision and framework for making professional development more responsive to the learning needs of both educators and students.

LEARN NC - The North Carolina Department of Public Instruction has partnered with LEARN NC to offer North Carolina teachers' online professional development courses. Teachers may enroll in courses developed and taught by expert instructors whose advanced course work and/or research expertise in the content area set them apart from other teacher-trainers.

USDLC - United Star Distance Learning Consortium (USDLC), formerly known as StarNet, enables educators in all school systems to access USDLC's rich resources for professional development. A wide variety of online modules and video-on-demand programs are available. Many of the videos were filmed in North Carolina schools and feature the work of outstanding educators and programs. Course offerings are free.

eBistro - An online learning environment for educators in North Carolina designed to provide teachers with resources for classroom technology integration, IMPACT Model

implementation, grant writing, and other related topics. Log in to complete the learning module(s) of your choice and create a professional online digital portfolio. All modules are fully aligned with the North Carolina Professional Development Standards and present excellent opportunities for learning - for individuals or learning communities!

6. Triangle High Five

URL - <http://www.trianglehighfive.org/index.php>

Five major North Carolina Triangle-area business leaders and five public school systems created a public-private sector high school reform initiative designed to increase the number of graduates, reduce the dropout rate, and better prepare students for successful lives after high school. Entitled "High Five: Regional Partnership for High School Excellence," the five-year, \$2.5 million project represents the first collaborative venture for the five major area public school systems.

The partnership, created in April, 2004, was designed to support and enhance public high school performance by developing a regional approach in sharing best practices; facilitating collaboration between school districts, colleges and universities; identifying alternative delivery systems to reach at-risk students and broadening community support.

The regional partnership's funding comes from The News & Observer Publishing Company, Blue Cross and Blue Shield of North Carolina Foundation, SAS, Progress Energy and Capitol Broadcasting Company. The five Triangle public school systems participating in the program are: Chapel Hill-Carrboro, Durham County, Johnston County, Orange County and Wake County.

Through job embedded staff development, such as the implementation of subject specific discussion boards on the High Five website and the implementation of Professional Learning Communities, the partnership hopes to provide all teachers and administrators with the additional tools to challenge, engage and support high school students.

Tools and Services

7. ANGEL Learning

URL - <http://www.angellearning.com/applied/k-12/>

K12 Teaching and Learning

ANGEL Learning Management Suite is a comprehensive elearning solution for delivering web-enhanced and online classes that meet the needs of all an educational institution's constituents. The company offers a variety of courses and services to the K-12 market including:

- Professional Development
- State Standards Alignment to Class Content
- Virtual Classes
- Parent-School Communication
- Manage, Develop and Enrich Traditional Instruction

ANGEL states that its professional development services:

- Meet local needs

- Foster a culture of continued professional growth
- Allow access to professional development resources any place, anytime
- Develop technology expertise.

Professional development tools and services include:

- Ability to align standards to content & assessments
- Built-in learning object repository for sharing
- Online professional development
- Wikis & Blogs
- Discussion Forums
- Groups: for instructors, students, parents
- Quick announcements & updates
- Simple Podcasting
- Mail
- Controlled Chat & IM
- Multiple language capabilities

8. Edusoft Assessment Management System

URL - <http://www.riverpub.com/products/edusoft/index.html>

The Edusoft Assessment Management System is a standards-based assessment solution for districts to collect, analyze and act on student performance data to improve classroom instruction and student performance. Edusoft helps schools administer district benchmarks and classroom tests; delivers rapid results; improves the reliability of assessment programs; and connects assessment to instructional decisions. According to the Web site, more than 400 districts use Edusoft to design, score and analyze millions of student assessments each year.

9. The Teaching, Learning, and Technology (TLT) Group

URL - <http://www.tltgroup.org/Index.htm>

The TLT Group and its Flashlight Program support professional development in higher education, providing training, invited talks, webcasts, evaluation support, and outreach and dissemination. Their program is designed for a cohort of faculty members to improve teaching and learning with technology and also help colleagues. Among the tools and services TLT provides:

- Collections and repositories of instructional resources
- Brief hybrid workshops and online tutorials to make faculty development more accessible
- Video examples and case studies in faculty and professional development.

10. Connexions

URL - <http://cnx.org/>

Connexions is an environment for collaboratively developing, freely sharing, and rapidly publishing scholarly content on the Web. The Content Commons contains educational materials for everyone from children to college students to professionals, and is

organized in small modules that are easily connected into larger collections or courses. All content is free to use and reuse under the Creative Commons "attribution" license.

Users can view and share educational material made of small knowledge chunks called modules that can be organized as courses, books, reports, etc. Anyone may view or contribute:

- Authors create and collaborate
- Instructors rapidly build and share custom collections
- Learners find and explore content

Collaboration is encouraged. Connexions promotes communication between content creators and provides various means of collaboration. Collaboration helps knowledge grow more quickly, advancing the possibilities for new ideas from which we all benefit.