UNDERSTANDING HOW PROFESSIONAL LEARNING COMMUNITIES IMPACT TEACHING PRACTICE AND WHAT INFLUENCES THE PROCESS

BY

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ABSTRACT OF THE DISSERTATION:

Understanding How Professional Learning Communities Impact Teaching Practice and What Influences the Process

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Problem: Professional learning communities (PLCs) are not a new trend in education but are getting more attention in schools today as a vehicle for establishing collegial relationships among teachers and for building capacity for change within schools (Dufour & Eaker, 1998; Fullan, 2004; Hord, 2004; Senge, 2000). Schools are working diligently to become PLCs in hopes of improving student learning yet there are pitfalls schools must be cognizant of. The core principles of PLCs do not simply exist because leaders are calling them PLCs. Dufour cautioned "the term has been used so ubiquitously that it is in danger of losing all meaning" (Dufour, 2004, p. 6) while others warned of contrived collegiality as opposed to genuine collaborative teacher cultures (Hargreaves & Dawe, 1990). This study explores the development of PLCs at one middle school to provide feedback to improve practice while also building the research base on what contextual factors contributed to PLCs and how PLCs impact key components including pedagogy and assessment.

Research Questions: The questions explored in this case study of one grade level in a middle school are:

1. In what ways does teaching practice change as a result of participation in a professional learning community?

2. What aspects about the PLCs contributed to the change?

3. What contextual factors contributed to the PLCs capacity to support teacher change?

Methodology: A qualitative case study was used focusing on information gained from interviews, observations, surveys, and documentation for this study. The administrative team and core eighth grade teachers were interviewed and 4 observations of PLC meetings were completed. Data analysis included organizing and analyzing data using Dedoose, a qualitative research software program.

Significance: Research on PLCs has typically focused on understanding what true PLCs are and how they can improve schools. This study focuses on identifying what types of changes took place in terms of pedagogy and assessment as a result of participating in PLCs. In addition, by focusing on a school that began the implementation process five years ago, the study aims to identify aspects about PLCs that contributed to instructional change. The study also identifies contextual factors that were critical for PLCs to support teacher change in order to help other school leaders that may be initiating PLCs in their own schools.

Dedication Page

I dedicate this paper to my loving husband, Sagar, our beautiful son, Jaiden, and our incredible son-to-be; they are the love of my life.

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CHAPTER I

Introduction

Society demands educational institutions produce positive, self-sustaining results within an immediate timeframe. In education, No Child Left Behind, within the Elementary and Secondary Education Act is an outcome of this trend. In an environment engendered by NCLB coupled with the global pressures stemming from an increasingly competitive educational world, educational organizations face an increased level of accountability and expectation. This enhanced urgency has placed disproportionate pressures on those who work in public schools. The trend to find something to transform educational institutions has been at the heart of all educational reform. Finding an all-encompassing idea to transform institutions teaching children, to organizations that enlighten young people has been an elusive task. Transforming schools requires dramatic change to the profession of teaching and everyone who works within that system. For system change to occur on a larger scale, we need schools and districts to learn from each other. This, according to Fullan (2006), is called "lateral capacity building". In the educational world, it is commonly known as professional learning communities.

Across the country, a growing number of school leaders are paying more than lip service to the idea that professional learning communities can help improve the education provided to our students (Louis, K.S. and Marks, H.M., 1998). Consequently, leaders are striving to develop and foster professional learning communities in their districts. It is an idea that goes beyond raising achievement standards or test scores. It involves transforming the organizational culture, changing the way participants interact, allowing greater freedom to explore and pursue new ideas for educating students without threat

from the usual villains of bureaucratic inertia, self-interest and the status quo (Lafee, 2003). One way in which the transformation may come is through the conscious efforts of educators to create professional learning communities in their schools.

Professional learning communities are not a new trend in education, but are getting more attention in schools today than ever before. Over the last ten years, numerous researchers have written about professional learning communities and how they can be the vehicle for establishing collegial relationships among teachers and for building capacity for change within schools (DuFour and Eaker, 1998; Fullan, 2004; Hord, 2004; Senge, 2000). Many elementary, middle, and high schools are working diligently to become professional learning communities in hopes of improving student learning through the collaboration and dedication of teachers and administrators. The New Jersey Department of Education (NJDOE) created a Commissioner's Task Force on Quality Teaching and Learning to provide guidance in moving towards improving education. The task force, utilizing the National Staff Development Council's standards for professional learning, mandated that every public school design a detailed professional learning action plan. These district plans must ensure that teacher collaboration is engaging, relevant, and meaningful. Educators must be asked to engage in cooperative activities around learning that is connected with specific goals established around student achievement (Librera, 2004). As a result, the Pine Hill (pseudonym) Public School district began the initiative of implementing professional learning communities in each school. The district provided ongoing professional development to each school over a two year period so that teams of administrators and teachers were able to work together in developing an implementation plan for their schools.

While all of this sounds encouraging and positive, there are pitfalls that administrators must be aware of in moving forward with building professional learning communities. The core principles of professional learning communities do not simply exist because leaders are calling them PLCs. Supovitz (2002) study on developing communities of practice found that the communities were successful in improving the school culture, not in improving instructional practices. His research showed that teacher meetings were typically taken up by paperwork for the school or district administration among other things. The teams in the study reported spending about 25% of their time on administrative work, 30% on student discipline issues, 20% on paperwork from their school and district, and the rest of their time on teaching and learning issues, which is a true shortcoming in developing effective PLCs. In fact, Dufour cautioned "the term has been used so ubiquitously that it is in danger of losing all meaning" (Dufour 2004, p. 6). He recommended that educators continue to reflect on how they are working to embed student learning and teacher collaboration into the school's culture in order to prevent PLCs from facing the same dismal fate as so many other well intentioned reform models. This is critical to avoid the "attempt, attack, abandon cycle (Knight, 2009) that so many schools face in trying to improve their schools.

In addition to misusing the term PLC, researchers and practitioners must be cognizant of different sides of collaborative professional development. While it can be used to increase faculty empowerment, encourage personal growth among teachers, and bring colleagues and their expertise together for critical reflection on what they do, it can also be used as a method of breaking down teacher isolation only to introduce and impose "preferred forms of action decided upon by external factors…in which teachers become

technicians rather than professionals exercising discretionary judgment" (Hargreaves & Dawe, 1990, p. 230). These contradictions often caused initiatives focused on collaboration to be misunderstood. Specifically, the research focused on how "efforts towards developing norms of collegiality among teachers create critical and collaborative teacher cultures which develop curriculum and pedagogical reform from within the profession, on the one hand, or forms of contrived collegiality, which are administratively designed to smooth the path of externally imposed innovation, on the other" (Hargreaves & Dawe, 1990, p. 230). As schools look to implement PLCs, they must know if the schools are truly functioning as PLCs and which actions to create PLCs actually work to create collaborative teacher cultures.

To meet the requirements of the new initiative, Cherrywood (pseudonym) Middle School developed its own professional learning plan, with guidance from its district's central office. The plan identified the need to develop smaller professional learning communities (PLC) within the building in order to achieve continuous professional growth around student achievement. In August 2008, the Cherrywood Middle School administrative team launched this initiative to begin establishing professional learning communities with the support of the professional development committee. The leadership team in conjunction with the professional development committee provided a variety of supports to encourage the implementation of PLCs including the development of a clear vision and goals, an increase in time for collaboration, job-embedded professional development, consistency and ongoing support, and increased teacher leadership. These supports were provided throughout the year and became the foundation for the implementation of PLCs at Cherrywood Middle School.

This study utilizes a qualitative case study to explore the development of PLCs at CMS, specifically with the eighth grade content teachers in order to provide feedback to improve practice while also building the research base on what contextual factors contributed to PLCs and how PLCs ultimately impact key components including pedagogy and assessment. By understanding the PLCs that exist in eighth grade, and looking carefully for the changes that have taken place in each content area, the study assessed the current reality of the PLC initiative at a particular site to understand how the implementation changed teaching practice. The questions explored in this case study of one grade level in a middle school are:

1. In what ways does teaching practice change as a result of participation in a professional learning community?
2. What aspects about the PLC's contributed to the change?
3. What contextual factors contributed to the PLCs capacity to support teacher change?

As the departments continue to sustain PLCs, a better understanding of what supports were beneficial and how it changed teaching practice will help other districts as they consider or continue their own implementation of PLCs. The discussion that emerges from the findings should help educators in CMS to improve the functioning of their PLCs and may help educational leaders beyond the school as well as the professional development committee at Cherrywood Middle School to reflect on the process so that they can refine and successfully advance their initiatives in order to sustain effective PLCs. They can also begin developing a new plan for the future that will enhance what they have already accomplished.

CHAPTER II

Literature Review

The framework for this study (see Figure 1) represents my assumptions about the aspects of leadership that influence professional learning communities, which then influence teaching practice in the classroom. The effects of leadership directly affect school and classroom conditions, in this case, the implementation of professional learning communities which influence teaching practice.

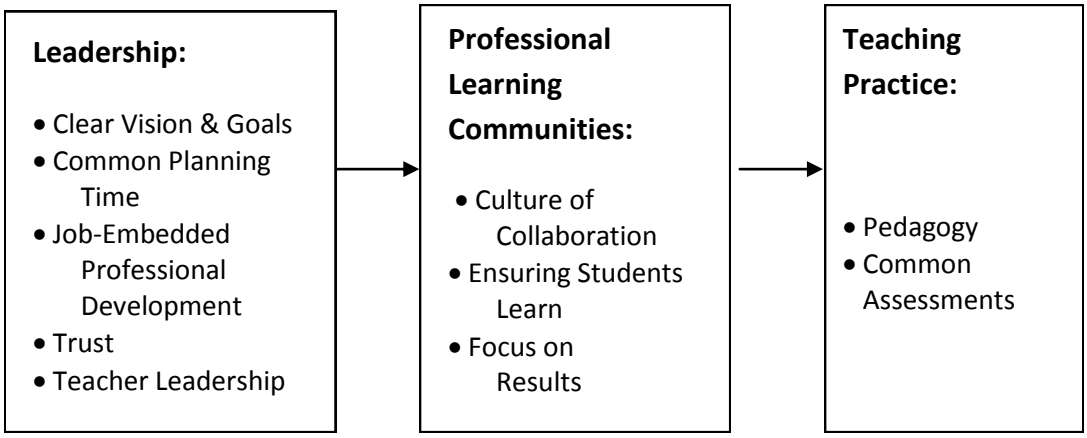

Figure 1: Leadership influences on PLCs to improve teaching practice

Teaching Practice

Pedagogy. While teaching practice encompasses so many factors, for this specific study, the focus was specifically on aspects of pedagogy and assessment. Authentic pedagogy emphasizes higher order thinking, the construction of meaning through conversation, and the development of knowledge that has value beyond the classroom (Louis & Marks, 1998), which is what we want teachers to utilize in the classroom. This study also focused specifically on aspects of pedagogy where changes in teaching practice may take place. Therefore, while there are so many facets of pedagogy that are crucial, the focus was mainly on changes in instructional practices, flexibility of classroom arrangements, and changes in pacing of instruction.

Changes in Instructional Practice. Before teachers are able to utilize a variety of instructional practices in the classroom, they must plan and develop instruction in which students have opportunities to learn about, experience, relate, and apply core disciplinary ideas (Gardner & Dyson, 1994; Wiggins & McTighe, 1998). Discussions on what they want the students to learn and the instructional strategies used in the classroom are critical in deciding what is best for students in the classroom. Conversations in which teachers describe teaching practice in order to learn ideas and skills from each other and from research helped teachers improve their own instructional practices. Using their professional learning communities to drive these discussions becomes a key aspect of utilizing their collaborative time effectively. Furthermore, these discussions help teacher turn abstract knowledge into communication in a "language form that could be examined, borrowed, and transformed" (Englert & Tarrant, 1995, p.331). As teachers in this study began using a variety of instructional strategies, they also found themselves continuously evaluating their practices in terms of student achievement. They were consistently searching for the positive effects of curriculum on their students to help validate their decisions.

Flexibility of Classroom Arrangements. As the teachers in Englert and Tarrant's study began discussing and utilizing instructional practices, they were also making changes in their classroom structures. The teachers identified a certain level of personal discomfort in shifting from "the traditional structure of a quiet classroom where students worked in their seats" (p.333) to a dialogue-type centered classroom. They had to be willing to move away from the quiet classroom to encourage discussion and activity. They also had to move away from having total classroom control, putting the students in

control for the cognitive work. In addition to the shift in terms of moving from teacher directed to student centered, teachers also became more flexible and purposeful in their grouping and regrouping of students to take advantage of the team member's strengths and the small student groups for particular instructional purposes (Supovitz, 2002). The flexibility in grouping allowed the teachers to meet the individual needs of each child while raising the ownership and accountability for all students by moving towards a student centered environment.

Changes in Pacing of Instruction. Finally, while the teachers became more comfortable discussing teaching strategies and reorganizing their classrooms to represent active learning communities, they also discussed important details regarding the curriculum. Referred to as "setting up the curriculum" (p. 334), teachers read connected texts and discussed available resources and materials to meet curriculum expectations. Teachers gauged curriculum effects by monitoring students' performance (Englert & Tarrant, 1995) which encouraged discussions and decisions regarding curriculum pacing. Supovitz (2002) identified three attributes of communities of instructional practice that were related to student performance; teachers working collaboratively, examining and analyzing student work in relation to standards, and discussing a variety of instructional approaches to best meet the needs of each child. This focus on student needs and learning as opposed to meeting teacher needs or the mandated curriculum was a shift that was crucial to work towards improved teaching practices. These practices, when performed with fidelity, also avoided the negative impact of contrived collegiality within a school.

Englert and Tarrant's (1995) study warned practitioners and researchers that teachers must be comfortable taking risks as they step away from their typical teaching routines

and that there must be a high level of trust among the teachers so that there is a supportive environment as opposed to a judgmental one when they describe their teaching successes and failures. This is crucial for teachers to have the open conversations regarding pedagogy and is discussed in further detail later on. In considering pedagogy alone, teachers found they constantly needed to be flexible in their decision making regarding what to teach and how to go about teaching it in order to best meet student needs. Research also indicates that changes in student assessment need to take place to best meet the needs of students.

Assessment. The actions of a teacher both in and out of the classroom have a direct impact on the quality of the learning and teaching occurring in the classroom. Above, I discussed pedagogy and the research that indicates the value of improving the pedagogical processes used by teachers. The next section focuses on assessments, specifically on the use of common assessments, and how they improve student learning. Numerous steps have been identified that must occur to develop common assessments that are used across classrooms. Teachers responsible for the same course or grade level create a common formative assessment prior to teaching a unit instead of individually developing their own end of unit, or summative assessment (DuFour, DuFour, Eaker, 2008). Researchers identified specific steps that must be followed to properly develop and utilize common assessments including first agreeing on the standards and specifying the content, and kind of thinking that teachers would like the students to achieve. The teachers then work together to develop the assessments based on the targeted thinking and content knowledge they want the students to know and establish a timeline for when the assessment will be given to all students. Next, they discuss various teaching

strategies and how they will continue to check for understanding (DuFour et al., 2008; Brookhart, 2010). DuFour, DuFour, and Eaker (2008) then take it a step further in explaining that after administering the assessment, teachers work collaboratively to analyze assessment results within their own classrooms and in comparison to one another. By taking these steps to develop common formative assessments, the teachers are focusing on the crucial question of "How do we know if our students are acquiring the intended knowledge, skills, and dispositions of this course, grade level, or unit of instruction?" as the "linchpin of the PLC process and a critical component of the work of collaborative teams" (Dufour, Dufour, Eaker, 2008, p. 26). Teachers in PLCs work collaboratively to analyze assessment results to ensure student learning while also learning from one another. There are many benefits to teachers developing common assessments in their classrooms.

Numerous researchers have identified the value of assessment and how it can be used to increase student achievement and for ongoing improvement of educators. Fullan (2004) found that assessment for learning can be one of the most powerful, high leverage strategies for improving student learning. He found that as teachers worked on developing high quality assessments and began discussing them, that educators collectively became more skilled at assessing, disaggregating, and using student achievement as a tool for ongoing improvement. This is an essential skill for not only teachers, but for the leadership to know, understand, and use on a regular basis. William and Thompson (2007) argued that common assessments helped provide the largest gains in student learning and found numerous reasons to support their claim. It takes strong subject matter knowledge and expertise to be able to unpack standards, develop common

assessments, identify the problems students are having with content based on the results from assessments, and develop solutions to the problems they found. William and Thompson also found that as the teachers worked collaboratively; they were much more likely to possess the high level of expertise and content knowledge needed than if they were working through the steps identified above in isolation. Furthermore, as teachers analyzed their results together and found evidence that the students taught by their colleagues were achieving at higher levels, they were much more motivated to investigate alternative instructional strategies. While teachers were commonly afraid to take risk in the classroom with instructional practices, they were more likely to take those risks if they had the support of their collaborative team to help reduce the discomfort of implementing new strategies. Finally, William and Thompson found that when teachers worked collaboratively to develop common assessments, they were engaged in the most powerful form of professional development – learning that is job embedded and sustained over time. The value of common assessments and how they can improve student learning were easily identified through their research.

As teachers continue to look for ways to improve student achievement in their own classrooms, leaders look to improve student achievement as a whole school. Dufour et al. (2008) argued that one of the most powerful strategies available to a school that hopes to become an effective PLC is to engage teachers in the creation of high-quality common assessments. This is true not only because they are identifying strategies that lead to the highest level of learning among the students, but because this process should lead to teachers teaching one another, using their individual strengths to improve and enhance the team's overall effectiveness. It helps teachers make the transition from a

focus on teaching to a focus on learning which is crucial as schools work to embed the concepts of professional learning communities into their schools.

Professional Learning Communities

Many schools and districts have begun implementing professional learning communities as a means of increasing student achievement. Valuable research has been conducted on the impact and value of PLCs in improving schools to help better meet the needs of their students. McREL (2003) defines PLCs as a group of people sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented and growth-promoting way. Hord (1997) defined it as an ongoing process through which teachers and administrators work collaboratively to seek and share learning and to act on their learning, their goal being to enhance their effectiveness as professionals for students' benefits. Reichstetter (2006) defines PLCs as team members who regularly collaborate toward continued improvement in meeting learner needs through a shared curricular-focused vision. For the purpose of this study, the definition provided by DuFour, DuFour, Eaker, and Many (2006) is utilized. DuFour, DuFour, Eaker, and Many (2006) define it as "educators committed to working collaboratively in ongoing processes of collective inquiry and action research to achieve better results for the students they serve while operating under the assumption that the key to improved learning for students is continuous, job-embedded learning for educators" (p.217). The fundamental assertion of PLCs is that teachers can and should be working together to plan lessons, develop assessments, study curriculum, and otherwise improve student learning (Dufour, Dufour, Eaker, 2005; McLaughlin & Talbert, 2006; Mitchell & Sackney, 2000; Zmuda, Kuklis, & Klein, 2004). There are three core principles of

professional learning communities that are interwoven to help improve student learning. For this study, the three principles, identified in the Dufour, Dufour, Eaker model, are a culture of collaboration, ensuring students learn, and a focus on results. These fundamental assertions of PLCs are critical in improving student achievement, but practitioners must be aware that simply calling groups of teachers a PLC, does not make it so. The intention of this study is to explore both the conditions that facilitate implementation of PLCs and the results of such implementation on teaching practice.

Culture of Collaboration. While collaboration, when defined on its own, is a group of people working together on a regular basis; for this study, collaboration in a school system is defined as teachers working together to clarify what students must learn by identifying the most essential skills and concepts a student must acquire, as well as curriculum content that should be eliminated to provide more instructional time for what is deemed essential. Teachers work together to discuss the essential standards, the instructional practices, and the materials they will be using in their classrooms. In this process of encouraging collaboration, there is a shift that occurs in the culture where teachers move away from isolation. They shift from working independently to interdependently, from focusing on their own individual goals and personal agendas to fulfilling common goals and fulfilling a collective purpose (DuFour et al. 2008). "While Reeves may refer to power standards, Marzano to a guaranteed and viable curriculum, and Lezotte to clear and focused academic goals, they are all advocating the same principle: schools are more effective when the teachers within them have worked together to establish a clear and consistent understanding of what students must learn." (p. 187).

In general, the research on collaboration will indicate that schools benefit from open and honest atmospheres that thrive on open communication, reflecting, and the willingness to change. Louis and Marks (1998) developed a professional community index that showed that effective PLCs included both collaborative activities and the deprivatization of practice. Bolam (2005) completed a comprehensive study on PLCs and found that his data suggested a positive impact on teaching practice and morale because of teachers' participation in collaborative activities. As the teachers worked in learning communities, they found an increase in their collaboration. Kouzes and Posner (2002) found that with a climate of trust, cooperation, and systems in place around ongoing interaction, that positive results focused on cooperative goals, exchanging ideas and resources, and responding to student achievement through collaborative teaming could be achieved.

On the other hand, DeWees (1999) argued that PLCs can create divisive rivalries or fracture existing relationships when school leaders separate teachers into teams. He found that conflicts can develop from the commitment a teacher feels towards the whole school versus the smaller unit, or team, which can lead to rivalries. Furthermore, Hargreaves (1992) identified five basic forms of teacher culture that are drastically different; individualism, Balkanization, collaboration, contrived collegiality, and moving mosaic. Understanding these forms of teacher culture is important to understand educational change. Individualism focuses on teacher working in isolation from one another while Balkanization focuses on groups that are often competitive in hopes of gaining power, status, and available resources. Collaborative cultures are built upon trust and support where they look to benefit from collective expertise of the teachers

community, both inside and outside the school. Contrived collegiality is regulated by school administration and is therefore not voluntary collaboration. In this type of culture, the teachers are responsible for implementing administrative plans as opposed to authentic collaboration among the teachers. Finally, moving mosaic focuses on the shifting patterns of organizational culture, where the struggle is in clearly identifying the school's vision. Understanding the teacher culture in a school is critical for leaders to know and understand when work towards implementing PLCs. School leaders must ensure that the vision and goals for the school are consistent and agreed upon by all teachers, while also providing the freedom for teachers to grow and learn from each other.

In addition to research on the importance of a collaborative culture, there is also a great deal of research that indicates the detrimental effect that isolation has on improving student learning. Schmoker (2006) stated a "culture of privacy and non-interference is the best friend of the status quo" (p.14) because "the isolated teacher will never have to confront the fact that their colleague next door is more effective" (p. 24). Numerous researchers have found that the culture of isolation, privacy, non-interference, and the unwillingness of teachers to work together prevents professional growth. It prevents educators from examining evidence of student learning together and moving to the important work of improving instruction (Little, 2003). Elmore (2006) argued that the "design of work in schools is fundamentally incompatible with the practice of improvement" due to teacher isolation in self-contained classrooms. He believed this flawed design provided minimal opportunities for teachers to engage in continuous and sustained learning about their practice in the setting in which they actually work (Elmore,

2006, p. 127). The shift from isolation to collaboration continues to be crucial in improving teaching practice, which in turn, influences student learning.

Ensuring Students Learn. In addition to a culture of collaboration, teaching practice must focus on student learning in order to influence teaching practice. By shifting the focus from teaching to learning, the teachers are focusing on meeting the learning needs of each student. Supovitz (2002) and Supovitz and Christman (2003) found that there was significant improvements in student achievement only when teachers worked in teams or communities that focused on instructional practices and how they impacted student learning. Phillips (2003) interviewed middle school teachers and found that the teachers consistently analyzed student data from each child to gain a better understanding of how to impact their learning, both academically and emotionally. Through his study he found that the teachers were successful because they knew their students well and therefore developed instructional practices that would make learning more meaningful. Louis and Marks (1998) concluded that the focus on quality of student learning during PLCs increased achievement because teachers were using authentic pedagogy. In continuing their work with PLCs, DuFour et al. (2008) continuously found that effective collaborative teams were engaging in collective inquiry by focusing on the four critical questions of learning: (1) What is it we want our students to learn? (2) How will we know if each student is learning each of the essential skills, concepts, and dispositions we have deemed most essential? (3) How will we respond when some of our students do not learn? (4) How will we enrich and extend the learning for students who are already proficient? (p. 183-184). Research indicates a common theme that in order to

develop successful and effective PLCs, teachers must consistently focus their time on ensuring all students learn.

Cochran-Smith and Lytle (1999) looked at teacher learning more deeply and identified three distinct conceptions of teacher learning that become critical in understanding the quality of collaboration through PLCs. Knowledge-for-practice, knowledge-in-practice, and knowledge-of-practice are described in more detail to show the different purposes of teacher learning. Knowledge-for-practice focuses on formal knowledge for teachers to use to improve practice. Highly skilled teachers have deep content and pedagogical knowledge that is used to support student learning. In this conception of learning, teachers learn information through various professional development opportunities. The teachers are expected to learn and then implement the knowledge acquired by experts outside the classroom. Through this type of teacher learning, the teachers are "knowledge users, not knowledge generators". The second conception of learning, identified as knowledge-in-practice, focuses on practical knowledge which teachers learn when given opportunities to digest the knowledge embedded in the work of expert teachers. In this situation, teacher learning occurs through experience and deliberate reflection to help enhance their practical knowledge. Teachers work collaboratively and use information to deepen their own knowledge and expertise to improve practice as opposed to being taught by experts. Finally, knowledge-of-practice focuses on teachers using their own schools and classrooms as a place of inquiry in which they take other's knowledge to explore and question their own learning before constructing and reconstructing, and synthesizing the information to transform their classrooms and the school as a whole. The goal of knowledge-of-practice is to

"understand, articulate, and ultimately alter practice and social relationships in order to bring about fundamental change in classrooms, schools, districts, programs and professional organizations" (Cochran-Smith & Lytle, 1999, p. 279). This type of teacher learning requires systematic collection, analysis, and interpretation of data sources as a collaborative group. Using Cochran-Smith and Lytle's research, assessing and understanding the progress of teacher learning becomes clearer during the PLC process.

Focus on Results. The third principle of PLCs indicates the importance of teachers focusing on results. This principle is focused on what teachers do once they have worked collaboratively to develop units that teach the identified curriculum and have developed assessments that will provide ongoing feedback throughout a unit of study. Teachers must work collaboratively to disaggregate and analyze student data that will be used to drive instruction. Lezotte (2005) found that when teachers were reviewing and discussing their student achievement data and developing intervention and enrichments programs based on individual student needs, that they had developed a focus on results; one that produced individual growth for each child. When teachers were analyzing their own assessments to find trends in student learning, and then were comparing their results with grade level or content partners for overall trends, they were able to find trends in what the students clearly understood and what skills or content needed to be reviewed. Schmoker's (2006) study indicated that there was great value in schools completing honest evaluations about their everyday instruction and how it affects student achievement. He argued that the teaching did not need to be exceptional; that it just needed to conform to effective practices to bring about serious change in the students' lives, regardless of socioeconomic levels. The research base on assessment and

how it increases student achievement while also providing ongoing improvement of educators continues to grow as schools move forward with implementing PLCs.

In addition to the critiques identified under the three core principles of PLCs, there are also other forces that are constantly working against reform efforts in schools. Giles and Hargreaves (2006) identified factors including changing leadership, the gradual loss and replacement of key faculty, changes in the size or composition of the student body, and shifts in policy or the district's attention to other priorities that often lead to a school's decline even though the best intentions for school reform exist. These factors can negatively impact a school and cause regression in terms of school initiatives. School leaders, including both administration and teachers, must be cognizant of such forces in an effort to be proactive in handling them, when they occur.

As schools continue implementing PLCs and ensuring that the three principles are woven together to develop schools focused on meeting the needs of all students, leadership plays a critical role. Supovitz and Christman (2005) found that the "key to widespread improvement in student learning through teacher collaboration is the formation of communities of instructional practice…and that district and school leaders must provide these communities with the necessary structures, strategies, and support to help teachers hone their instructional craft knowledge" (p. 649). McIntosh and White (2006) clearly articulated this point in sharing that as schools move from initiation to implementation to institutionalization of PLCs, a critical factor for success is commitment, which is where school leadership plays an integral part.

Leadership

Professional learning communities have the potential to bring about drastic improvements in teaching and learning, but school leadership is a critical factor in ensuring successful implementation. In general, Fullan, (2001) and Sergiovanni (2001) found that the quality of leadership is extremely important in determining the quality of teaching occurring in the classroom and the level of motivation of teachers. Leadership is crucial in the implementation of any programs introduced in schools. In this case, numerous studies have identified the importance of principal leadership in implementing PLCs (Dufour, 1999; Dufour & Berkey, 1995; Huffman et al, 2001; Printy, 2008). The studies showed how leadership can either support or impede the development of PLCs and the importance of principal leadership in their ability to promote shared values, develop staff consensus, ensure collaboration in a systematic fashion, encourage risk taking behaviors, and promote the self-efficacy of teachers. School leadership is clearly vital to the successful implementation of PLCs, as with any school or district initiative. For the purpose of this study, my focus is on the particular actions the leadership team took to support teachers on the implementation of professional learning communities.

Clear vision & goals. One important step school leaders must take to encourage school improvement is develop a clear vision and aligned goals by working with the stakeholders involved. A committed focus is essential to produce "deep change with long-lasting results that in turn produce success for students" (Hirsh & Killion, 2009, p. 467). Through their study, they found the importance of focus for all stakeholders, and how crucial it was in order to meet goals related to student learning. The significant point in Hirsh and Killion's work was the importance of maintaining focus regardless of what

pressures existed internally and externally for school leaders. Doolittle and Rattigan (2007) found that leaders are unable to focus on the school's core mission because of numerous factors that consume their time including accountability reporting required by school and districts. As school leaders continue wearing a variety of hats to successfully complete their responsibilities, they must find the balance of focusing on the core vision and goals while also meeting accountability standards. Elmore (2004) also found this to be true and that time was spent responding to numerous stakeholders and the need to meet multiple sets of standards – which caused fragmented attempts at improving teaching and learning. While the research presented above identifies the importance of leaders maintaining a focus on the school's mission and goals, there is also a large amount of research that indicates that teachers can coalesce around a shared vision of what high quality teaching and learning is, if they are provided with supportive structural conditions and human and social resources. When the teachers are given this level of support and a focused vision, they begin to take collective responsibility for improving student learning (Lee and Smith, 1995, Little 1990, Louis & Marks, 1998; Louis et al, 1996; Newmann et al, 1995). This collective responsibility can become the driving force for improving student achievement, when provided with the right supports.

Time & space. As stakeholders work towards developing a clear vision and goals for a school, there are also other supports that are essential to PLCs. One valuable structural support, that is critical in developing meaningful PLCs, is time. If school leadership identifies PLCs as crucial to improving schools, they must acknowledge that teachers need both time and space to collaborate and focus on student achievement. Numerous studies found that "institutional characteristics," such as time and space, were

essential in facilitating PLCs and relaying the importance of their time to work together (Chubb & Moe, 1999; Lortie, 1975; Paine & Ma, 1993; Stevenson & Sigler, 1994; Stigler & Hiebert, 1999; Wang & Paine, 2003). Specifically, Servaise, Sanders, and Derrington (2009) focused on systemic and school based improvement by describing four different PLC models in different venues. They found that commitment to time was an essential resource for successful implementation of PLCs, regardless of setting. These specific logistical constraints are challenges that schools continue to face (Cochran-Smith & Lytle, 1999; Darling-Hammond, 2005), but must be considered to move forward with meaningful PLCs.

Job-embedded professional development. As school leaders continue to work towards identifying a clear vision and goals and finding time and space for teachers to collaborate with one another, they must also work towards providing meaningful professional development for teachers to understand the value of PLCs. They must work collaboratively with the teachers in developing meaningful PLCs. In order to move away from one time disconnected professional development that is often not meaningful or valuable to teachers, many administrators are developing ways to provide job-embedded PD. This type of professional development shifts from single workshops to teacher learning that is part of daily practice where the focus is on high-quality instructional development that directly links to students learning (DuFour, 2004). It is associated with learning activities that occur during work hours and that support the instructional needs (Moyer et al, 2006) of teachers. Harris et al (2006) found that schools in their study that had improved moved towards PD opportunities including mentoring, coaching, and peer review as opposed to the traditional in-service training model. They found a positive

impact on the teachers including greater confidence, an enhanced belief in the ability to make a difference in a child's learning, enthusiasm for collaboration with colleagues, willingness to take risks in the classroom, and a willingness to change practice (Cordingley, Bell, Rundell, & Evans, 2003). In order to encourage these actions among teachers, school leaders must encourage job-embedded professional development. Many studies indicated that when encouragement and support was provided by leadership, there was an increase in willingness for educators to talk about teaching and learning, to observe each other teach, plan, design, research, and evaluate curricula, and to teach each other what they have learned about their craft (Barth, 1990; Deal & Peterson, 1990; Dufour & Berkey, 1995; Sargent & Hannum, 2009; Wineberg & Grossman, 1998). PLCs are "coming to be regarded as an effective approach to teacher professional development and have been more effective in improving the quality of teaching and learning, inasmuch as they keep teacher learning embedded in the life and work of the school, and to be intimately connected to teachers' daily challenges in the classroom" (Sargent & Hannum, 2009, p. 274). The positive impact of professional development for teachers as they work to develop meaningful PLCs is essential to working towards improving student achievement.

Trust. In order for job-embedded professional development to be meaningful, teachers need to build positive relationships in which the faculty trusts one another to collaborate and improve student learning. The connection between trust and professional development was clearly identified in Stoll's study (2006). His work showed that teachers were not as likely to participate in various forms of learning such as peer observation and feedback, mentoring partnerships, discussions about instructional

practices, or changes in curriculum without having trusting and open relationships among their colleagues. Therefore, school leaders must help teachers build meaningful relationships by creating a positive atmosphere focused on trust and collaboration. In order to encourage greater collaboration, build morale, and a collective responsibility for the students, teachers need to build relationships with one another (Stoll & Fink, 1996). Similarly, Louis and Marks (1998) argued that in order to promote openness, trust, genuine reflection, and collaboration, that schools must focus their attention on the development of school-workplace relationships. They also found that while individual teacher performance was important, that collegial support and extensive external support was necessary to help schools become professional communities. This openness and trust is crucial to the development of professional learning communities and therefore must be a priority for school leadership.

On the other hand, school leadership must be careful to provide an environment where teachers are surrounded by an environment that allows open communication, as long as it is always focused on improving student achievement. While studies like Gilgrane, Roberts, and Russell (2008) show that the level of trust and involvement increased among the teachers when they were given the freedom to vent about their frustrations and concerns, others argue that schools leaders must remember that there is a difference in developing a school atmosphere that improves the quality of day to day life in school as opposed to colleagues working collaboratively to improve students' learning by focusing on specific outcomes (Furman-Brown, 1999). Stoll et al warns schools leaders that they must be cautious in providing a "context for predictability, stability, assurance, and safety, [because] the response may not be reflective conversation and

professional learning" (2006, p.239) because this type of atmosphere could inhibit innovation by keeping teachers happy with the status quo. Providing support and consistency is even more important as teachers struggle so that they don't feel the need to pretend that all is well in their classrooms. School leaders must provide teachers with an open and honest atmosphere that values and encourages collaboration, specifically focusing on improving student achievement.

Encouraging teacher leadership. The final aspect in developing effective PLCs focuses on encouraging teacher leadership. Much like school leaders must provide an open and honest atmosphere that values and encourages collaboration, leaders must also encourage teacher leadership to improve the whole school and overall student achievement. The roles and functions of teachers and leaders together have been integral in successful school reform (Silins, Milford, Zarins, & Bishop, 2000). A specific example of the value of teacher leadership came in a study by Supovitz (2002) in which he compared team-based and non-team based teachers' perceptions of school culture. He found "strong and persistent evidence" that team-based teachers felt much more involved in school-based decisions. He concluded that by providing teachers with the opportunity to make decisions in their own learning process, that student learning would improve. More recently, Sargent and Hannum (2009) completed a study that found that teachers that were actively engaged in decision making, whether it was focused on improving the curriculum, or the pedagogical strategies used to teach it, that the teachers "rated as excellent" where those who participated in PLCs. These teachers provided professional development or trainings to others, conducted demonstration lessons, and consistently reviewed research on teaching to support their decisions. Their work shows the value of

both, empowering teachers and using professional learning communities, to improve schools.

"For better or for worse, principals set conditions for teacher community by the ways in which they manage school resources, relate to teachers and students, support or inhibit social interaction and leadership in the faculty, respond to the broader content, and bring resources to the school" (McLaughlin & Talbert, 2006, p. 98). There are numerous supports that school leadership must provide to encourage high fidelity PLCs, and assessing this growth is a critical step in continuing progress and helping others learn through the process.

CHAPTER III

Methodology

A qualitative case study focused on information gained from interviews, observations, surveys, and documentation best met the needs of this study. By interviewing the eighth grade core teachers and the administrative team, I gained a deeper understanding of changes that took place in terms of pedagogy and assessment at CMS and of what contributed to the PLCs to promote teacher change. In addition to the interviews, I observed each department in 8th grade during their collaborative PLC time. Professionally, it helped bridge the traditional theory-practice, knowledge action gap by clarifying the dynamics of PLCs at CMS within the eighth grade teams in order to improve their functioning and inform the leadership team of necessary changes. This study provided an opportunity to create social change by studying teaching practices occurring in one middle school so others can learn from it. By utilizing a qualitative approach, I participated as both the researcher and as an active learner, to be able to share the story of PLC's from the perspective of a participant and colleague. Personally, I have greater self-knowledge and fulfillment in knowing that I continued to help a school that I was a member of for almost ten years, continue to grow after my departure. I utilized the information learned from the participants and from the school's growth to improve my own practice as a colleague and principal. Through this research study, I developed an even closer, more meaningful relationship with the participants through our work together. My hope is that our work together, because it was done with action in mind, will be utilized to improve practices at CMS and at other schools on the journey of implementing and sustaining PLCs. The next section provides detailed information about the site to help create a vivid picture of Cherrywood Middle School.

Setting

Cherrywood Middle School is one of nineteen schools in a large suburban district. The district factor group, which indicates the socioeconomic status of school district overall, is a GH which puts it above average but not among the very richest of New Jersey's more than 600 school districts. Yet, the specific school statistics would say otherwise. CMS's student population currently has about 25% special education and about 35% are eligible for free or reduced lunch. It is a Title I targeted assistance school with about 31% students receiving additional Title I services and supports. The school is home to 1,000 students in grades 6 through 8. The faculty includes about 70 teachers and 20 support staff. Each grade level is broken into "houses" which typically include a Math, Science, Language Arts, and Humanities teacher. In addition to the core teachers, there are several special education teachers that work across houses that provide support to the students with special needs. This study specifically focused on the eighth grade houses, House 8-1, 8-2, and 8-3, including the Humanities, Language Arts, Math, and Science teachers in addition to the administrative team.

History of PLCs at CMS. During the 2007-2008 academic year, district administration decided to bring professional learning communities to the school district. The district wide initiative began by identifying half of the schools to participate as Cohort I, while Cohort II would receive the same training during the 2009-2010 academic year. The district contracted Solution Tree to provide the training and consultation over the next two years using The PLC Toolkit: The Complete Resources of Richard Dufour, Robert Eaker, and Rebecca Dufour. The process of implementing PLCs at Cherrywood

Middle School began in the summer before the 2008-2009 academic year. Over the summer, central administration requested that school principals identify teams of teachers and administrators to attend the PLC Academy. The PLC Academy consisted of 5 full days of professional development on understanding and implementing PLCs. At CMS, the school administration including the principal, and two assistant principals, one of whom was me, decided it was essential that teachers volunteered to participate in the PLC Academy, as opposed to being invited or requested to be part of this initiative. An email was sent out asking for volunteers, which specifically indicated that teachers had to be willing to attend 5 professional development days, read a variety of materials, and present information to the faculty as the new leaders of PLCs at CMS.

At least twelve teachers volunteered to participate in the PLC Academy, so the administrative team made some difficult decisions. Teachers were selected from the volunteers based on such criteria as content knowledge, grade level, and typical level of resistance to new initiatives. The goal in selecting teachers was to have a diverse group that would be critical of the process, honest in their beliefs and concerns, and willing to learn, share, and teach the faculty once the team collaboratively understood the concept of PLCs and their vision at CMS. The PLC Academy participants finally included the principal, the assistant principal (myself), one 8^{th} grade female math teacher, one 7^{th} grade female language arts teacher, one 7^{th} grade male science teacher, one 6^{th} grade female language arts teacher, and two 6^{th} grade female special educational teachers.

During the 2008-2009 school year, Cohort I met five times with a consultant from Solution Tree to fully understand what PLCs were through the Dufour-Eaker model, their purpose, and what they looked like in schools. Through professional development,

consultants from Solution Tree reviewed the three core principles of PLCs as the foundation. Each session went into greater depth explaining the critical pieces of PLCs including the importance of a cultural shift, clarity in goals to be achieved, and collective commitment. The focus then shifted to how PLCs impacted teaching practice by focusing on the four critical questions and the value of assessment in driving instruction. The final piece discussed the importance of both intervention and enrichment in schools to meet individual student needs. As professional development continued for the PLC Academy team, the team began reading a variety of literature including case studies of schools at various points of implementing PLCs. The PLC Academy team began discussing how the information should be disseminated with the faculty. At CMS, the PLC Academy team began using faculty meetings to read and discuss short articles on what PLCs were so the faculty had time to ask questions and grasp the concept prior to full implementation. The faculty read articles to discuss aspects of PLCs they agreed with and disagreed with as the starting point for these critical conversations. The PLC Academy team discussed the three core principles of PLCs by sharing literature on a culture of collaboration, a focus on learning, and results orientation. One important activity completed by the faculty was the SWOT chart in which each department identified strengths, weaknesses, opportunities, and threats to fully assess teacher beliefs at CMS. This became the self-assessment used as the starting point for each department and the school overall. Teachers assessed where they were as individuals, as a department, and as a whole school. As the 2009-2010 school year began, the implementation of PLC fully became the PLC Academy team's responsibility with administrative support. No additional professional development was provided through

Solution Tree or through the district and the PLC work became the school's responsibility.

Schools rarely implement only one reform method or make one change in a school year in hopes of improving student learning. Schools are complex systems in which many variables are interdependently related. As CMS was beginning the implementation of PLCs, there were other initiatives that are important to identify including the enrichment program, specific house interventions, and also title I interventions. These are described below to provide additional background information about the school.

Prior to implementing the PLC model, CMS implemented a variety of student achievement programs commonly known as interventions. These programs were directed towards meeting a specific skill set and needs on the student level. These programs were developed by individual coordinators and teachers, working in isolation from the professional community. Two supplemental program interventions included the enrichment programs in math and language arts. Students were selected to participate in a second class in either math or language arts based on NJASK data, course competency, and teacher recommendation. These courses supported and targeted the gaps in comprehension of those students selected to participate. These courses were and continue to be conducted daily, in tandem with the student's regular math or language arts course. The math enrichment program began in 2005-2006. The language arts enrichment program began in 2008-2009. These enrichment programs continue to be part of CMS today.

In addition to the enrichment program, each house began developing intervention cycles based on student data. During the 2009-2010, each house teacher was provided a formatted team file of historical testing data for each student on their team. The achievement data included a student's elementary NJASK scores over time. Each month, the house teachers were provided a series of data questions to complete during team meetings in order to understand team strengths and weaknesses, and to generate questions in order to provide professional development around the data trends on the house. Each team designed targeted lessons to meet specific global house educational needs ascertained from studying the data. These data driven lessons were delivered during the team's advisory period. The administrative team shared their perceived and actual trends in the data which helped to guide their intervention practices during core time. After the initial implementation, the house teachers were provided additional reflective questions. These questions were designed to draw out what the team learned from their analysis of the data and how the trends were affecting individual instructional practices, future interventions and professional development. This yearlong process ended with each team sharing their data analysis conversations, intervention plans, lessons learned, and next steps in grade level presentations as a way for the teachers to learn from one another.

Starting in 2005 and continuing today, CMS began providing an after school program to assist students who had a history of being partially proficient on the NJASK. The After School Learning Lab (ALL) was designed to use a combination of teacher and computer tutoring services. Select students were provided a Study Island account, which is a computerized tutorial program. Each student was given time to address their

individual skills in a serious of online activities in both language arts and math. The program generated a variety of activities to assist student in learning a particular skill. Once the student felt they had understood the specific skill, they were given a test to obtain a proficient mark before moving to the next skill set. Math and Language Arts teachers were assigned to work with the kids using their study island accounts. The content teachers provided mini-lessons and answered questions to provide additional learning to help the students reach proficiency.

The final reform that took place within the timeframe of implementing PLCs was initiating AVID, Advancement Via Individual Determination, beginning at the start of the 2006-2007 school year. The program began with a cohort of eighth grade students, starting at CMS and moving into the high school the following year. The program is nationally recognized for their successful turn-around program for students interested and willing to dedicate themselves to reaching college regardless of previous years of being unsuccessful, academically. The program was designed around the core idea that every child will attend a four-year college. After implementation in eighth grade, the school wide focus utilized the best practices sponsored by AVID in hopes of developing a more academic culture. CMS used the program, not only to reach a cohort of students, but also to restructure the teaching methods to ensure that all students were provided a college ready education. The entire school was trained in best practices around writing, inquiry, collaboration, and reading activities. Teachers received professional development on Cornell Notes, Costa's Levels of Questioning, Skilled Questioning, and Socratic Seminars as a whole school. Unfortunately, with the severe budgetary cuts across the nation, the AVID program was not sustainable. The program ended in 2010 but the best

practices are still being used at CMS today. The descriptions of these programs, implemented simultaneously, help provide a clearer picture of what was occurring at CMS. As a complex system, many variables are related interdependently.

A qualitative case study was utilized to understand what changes occurred, if any, in pedagogy and assessment while also identifying aspects of PLCs that promoted teacher change. In addition, the case study also aimed to identify contextual factors that were relevant to the PLCs at CMS. The challenge undergirding this work is that "to understand the spread and sustainability of an educational innovation… researchers will need yet more opportunities to examine the interplay of thoughts, actions, structures, strategies, and effects (Riehl & Firestone, 2005, p.164). This method provided in-depth descriptions of influences and changes that took place, which seems to be an apt response to Riehl and Firestone's call for research. Case studies, such as this, provide the opportunity to learn about educational programs or initiatives such as this in great detail. It includes rich description that provides opportunities for the reader to vicariously experience site characteristics such as the setting (Creswell 1998).

Sample

The participants included the eighth grade core teachers in all four departments and the leadership team during the 2011-2012 academic year. At CMS, PLCs existed in multiple forms that overlapped one another. The PLCs existed by house, grade level departments, and whole school departments. For the purpose of this study, the focus was on their houses and their grade level department PLCs. In addition to the teachers, the administrative team consisted of the building principal and two assistant principals. The

table below indicates subject expertise, names (pseudonyms), number of years teaching overall, number of years teaching at CMS, and gender.

Table 1:

Participant Information

Content	Teacher Name	# of years in education	# of years at CMS	Gender
Humanities	Michael	13	12	Male
Humanities	Adam	6	6	Male
Humanities	Rick	20	15	Male
Language Arts	Dana	24	6	Female
Language Arts	Jennifer	6	6	Female
Language Arts	Tanya	8	8	Female
Mathematics	Abigail	12	12	Female
Mathematics	Josie	17	8	Female
Mathematics	Rihanna	9	9	Female
Science	Maggie	24	9	Female
Science	Peggy	28	27	Female
Science	Jenny	16	13	Female
Principal	Kevin	23	9	Male
Assistant Principal	Nick	13	4	Male
Assistant Principal	Donna	17	3	Female

Data Collection

Qualitative research focuses on up-close observation of behavior in settings as well as interviewing people in those settings and collecting and analyzing documents and artifacts. Its purposes are to describe settings and understand the definitions of those settings held by people in them (Firestone, 1987; Van Maarten, 1982). This study included the completion of individual interviews with fifteen participants followed up with a survey for each individual, observations of mini-department meetings for each content area, and gathering documents that provided a vivid picture of CMS. Each method of data collection is described in detail below. To facilitate triangulation across methods and to ensure data are collected on all relevant concepts, the concepts have been

mapped out in Table 2. This concept mapping provides a clear snapshot of data collection methods described in detail below.

Table 2:
Method-by-Concept Table

CONCEPT:	**Interviews**	**Surveys**	**Observation**	**Documentation**
TEACHING PRACTICE				
Changed instructional practice	Teachers describe changes in instruction. Principal describes changes in teaching over last 3 years.	5 Point Scale to indicate change in practice	Observe discussions that occur during meetings about teaching practice	N/A
Flexibility of classroom arrangements	Teachers describe changes over last 3 years.		N/A	N/A
Changes in pacing of instruction	Teachers & Principal discuss curriculum mapping & how it has changed		Observe discussion during mini-department meetings	N/A
ASSESSMENT				
Increasingly formative	Teachers describe formative assessment tools they use Principal describes how teachers are using formative & summative assessment	5 Point Scale to indicate change in assessment practice	If possible, observe analysis of either formative/ summative assessment during PLC meetings	N/A
Increasingly collective	Teachers describe change in assessment development over the last 3 years	Teachers complete the PLC Survey	N/A	N/A

Increasing use of state tests for formative purposes?	Teachers describe how NJASK is used to drive instruction Principal described how NJASK is used to make decisions as a whole school		Observe discussion of department and mini-department meetings	N/A
PROFESSIONAL LEARNING COMMUNITY				
Collaboration	Teachers will identify who they collaborate with on a regular basis on teaching and learning	Identify teacher network	N/A	N/A
Ensuring Students Learn	Teachers and principal describe how they focus on the 4 critical questions	N/A	N/A	N/A
Focus on Results	Teachers describe how they use data from formative and summative assessments Principal describes how data is used to drive decisions for the whole school	N/A	N/A	N/A
LEADERSHIP				
Goals	Teachers share their beliefs on school goals Principal describe how goals have changed over the last 3 years.	Identify school/ department goals for 2010-2011	Observe meetings to see if they are connected to meeting the goals	School and department goals
Common Planning Time	Identify amount of collaboration time provided	Identify collaborative planning time	N/A	Master schedule

Job-Embedded PD	Identify types of PD each teacher participated in this year Ask teachers whether they attend flex options together or not. Preference?	Identify types of PD received	Observe department meetings (2) and mini-department meetings to see if PD is embedded	N/A
Trust	N/A	5 point scale to indicate level of trust	Level of honesty and critical conversations during meetings	N/A
Support for Teacher Leadership	Teachers will describe opportunities that currently exist to increase teacher leadership.	List of activities/roles teachers play a part in	N/A	List of committees/ activities led by participants

Interviews. Individual interviews were conducted with the twelve teachers, taking approximately 40 minutes each. The interviews focused on how PLCs may have impacted their teaching practice, use of assessment, individually and as grade level PLCs, professional development, role of leadership, and their perceptions on how to sustain or enhance the PLCs that are currently in place. The interviews also included questions focused on identifying their roles at CMS including participation/leading clubs, coaching, supervising organizations, or events hosted in the building to gain an understanding of various teacher leadership roles. The questions solicited changes in pedagogy and assessment and the reasons for those changes. In addition to teacher interviews, individual interviews were conducted with the principal and assistant principals to gain the administrative perspective on classroom changes and the perceived influence of PLCs

on teaching practice. An important aspect of these interviews focused on how to continue to improve PLCs at CMS. The interviews, which took place in December 2011 and January 2012, were conducted either before or after school, or during their prep time so that they were completed in a timeframe that was convenient to the participants. Furthermore, the fifteen interviews took place in their classrooms or offices so the participants felt more comfortable responding openly and honestly. The interview questions were provided to the teachers and administrators in advance via email to provide an opportunity for reflection of practices and experiences prior to the formal interviews taking place. All interviews have been preserved as digital files, stored securely on my personal computer to ensure security of data collected.

One weakness in completing interviews with teachers as an administrator-researcher is that participants could have taken shared knowledge and assumptions for granted and may neglect mentioning them during the formal interviews. Another weakness could have been researcher expectancy, where inadvertent clues from the research as to what I want to hear from them may be a concern (Krathwohl & Smith, 2005). A third weakness may have been the perceived interviewer power, although this should have been minimized because I worked in a different building beginning in July 2010. Due to the weaknesses, the quality of information from the interviews could have been lessened, yet the interviews provided the teachers with a one on one opportunity to share their beliefs regarding the implementation of PLCs. Furthermore, my knowledge of the school and participants was beneficial in probing in areas that others would not know to do so. My pre-existing knowledge and understanding of the building, as both a teacher

and administrator, helped me formulate questions and guide the interviews to gain valuable information.

Surveys. As each teacher completed their interview, they were provided a survey that assessed perceptions on change in pedagogy and assessment. Teachers rated their beliefs around a culture of collaboration since the implementation of PLCs. Teachers identified the various types of professional development they received in the last year and other roles they held in the building in terms of teacher leadership. Finally, the teachers identified individuals they typically collaborated with or turned to regarding instructional support to look for patterns in terms of collaboration.

Observations. In addition to the interviews and the surveys, I observed one grade level department meeting per content area during February and March 2012. Through the observations, I gained a deeper understanding of how they utilize their time together and collaborate in order to provide rich data for the case study. Patton (1987) states that one strength of observational data is that it is collected "in the field, where the action is, as it happens" (p. 72). As the researcher, I recorded a thorough and careful description of each PLC meeting. By observing these meetings, I examined interactions among the three grade level content teachers for each department, including the interactions among the three grade level teachers with their respective colleague teachers for Math and Language Arts. I gathered a detailed description of their discussion while specifically focusing on how it connected to teaching practice and assessment. Observational field notes focused on recording information regarding setting, participants, interactions, and routines were kept.

This method provided an opportunity to learn about participant's ideas which they may have been hesitant to talk about during individual interviews. This process allowed me to "move beyond the selective perceptions of others" (Patton, 1987, p. 73), so that data was gathered from a variety of sources ensuring credibility. Reactivity may have been a concern because my presence at their mini-department meetings could have changed their normal behavior or the naturally occurring situation. This could have been a concern during the mini-department meetings because they don't typically involve the administrator being present. Yet my familiarity with the faculty, and especially the eighth grade teachers, was an asset to minimize their change in behavior from my presence.

Documentation. Finally, in order to provide a clear picture to the reader of information about Cherrywood Middle School, I gathered documentation to identify the school's beliefs and goals each year since the implementation of PLCs. Documentation included the school goals and a copy of the master schedule to understand how their collaborative time was created on a weekly basis.

By using a variety of data collection methods, this study has the foundation to produce an information-rich case study. Without clear planning and using a variety of methods for data collection, this research had the risk of simply becoming one person's account of a specific site, experience, or event. By triangulating data sources, the methods provided an opportunity to compare and cross check the consistency of information from different times and by different means (Patton, 1990). By comparing the observational data to the interview data, comparing what they said in public to what they said in individual interviews, and comparing the perspectives of different content

areas, the validity was greatly improved. Through the methods identified, I portrayed how school-level leadership provided support to the 8th grade teachers to improve teaching practice and use of assessments through PLCs. These methods also identified contextual factors that supported teacher change.

Data Analysis

Data analysis began from the very beginning of gathering data. As interviews were completed, each interview was transcribed and saved. The transcriptions were organized and analyzed using Dedoose, a qualitative research software program. In addition, a digital research journal was kept throughout the data collection process with the observation notes and the teacher survey data. All other relevant documentation was gathered either digitally or hard copies were scanned so all materials were stored together on my personal computer. As recommended by Creswell (1998), the first step, or formal phase of data analysis began with reading and rereading the interview transcripts and observation notes to begin to gain a sense of the data set as a whole. Once the data were entered, analysis began using the tools of Dedoose. In general, the analysis followed the same steps outlined by Marshall and Rossman (1999) and Miles and Huberman (1994) in order to code the data and test for understandings. As each interview was transcribed and uploaded, data review began by generating categories and themes as the first level of coding. Coding categories were initially based upon the conceptual framework described earlier. During the second review of the data, pattern coding was used to group the summaries of data produced in the first level into "a smaller number of sets, themes, or constructs" (Miles & Huberman, 1994, p. 69). New coding categories were identified and comparisons were done by house, department, and individual teachers.

Role of Researcher

In completing this type of research, the researcher role is critical and was considered carefully. As the researcher, my role at CMS must be clarified. I began there as a special education teacher in 2002. I taught with numerous teachers in a co-teaching model in addition to replacement classes for students with special needs. I taught at CMS for four years before taking on a new role. During my final year as a teacher, I also completed my internship for educational administration with the principal as my mentor. In June 2006, Cherrywood Middle School was forced to reduce the administrative team by cutting an assistant principal position and instead created a position titled "administrative intern". At this time, I was asked by faculty members to interview for the position and became the new administrative intern. Within weeks of holding this new position, many transitions took place. The principal moved to the high school and the assistant principal became the new principal. Shortly after, I interviewed again and was hired as the assistant principal. After four years as an assistant principal, I was hired as an elementary school principal in the same district in August 2010. I no longer worked at CMS in any capacity, but maintained relationships with the teachers and administration in a collegial manner.

This in-depth description of the process was provided to help understand my relationship with the teachers and administration at CMS. By working with the teachers as a colleague first, I had the time and opportunity to develop positive collegial relationships built on a foundation of trust. I had a clear understanding of CMS and knew the teachers and administration well, yet my new role as an elementary principal removed

me from any supervisory expectations at the school. The various roles I had in the building could have affected my interpretation during the course of this study. It was, therefore, crucial to identify personal and professional information about myself that could have affected data collection, analysis, or interpretation. It is also important to identify my own experiences, training, and perspectives that I bring with me as a researcher (Patton, 1990) including being a member of the PLC Academy team that received professional development through Solution Tree over the two year period. I worked with the teachers that attended the original training and also met with the team regularly to establish procedures and routines for initiating and implementing PLCs across the school. In addition to being aware of my own perspective and how it could affect my fieldwork, I documented all procedures so they could be reviewed by others for bias.

While there are typically advantages and disadvantages to conducting a study where the role of the researcher and the administrator are one, my unique situation strengthened the advantages. One advantage of being both the researcher and the participant was that I became the chief instrument or tool in the collection and interpretation of data (Denzin & Lincol, 2000b; Goetz & LeCompte, 1984; Merriam, 1998; Stake, 2000a). While I am not currently present as an administrator, based on my description of my various roles at CMS, I knew the culture better than any outside researcher could learn to understand or describe. Furthermore, other advantages include the positive rapport that already existed between the participants and me, as opposed to having to spend time in a new atmosphere to build the rapport necessary to get honest feedback from any data collection methods. Also, there was no initial time period

required for the participants to get comfortable with me because of the administrator-researcher role, therefore minimizing the possibility of reactivity. A key advantage of this type of research was the direct benefit to the school and participants. One of the greatest outcomes of this case study was knowledge of what is occurring within the school which may increase their motivation to effect change. The knowledge that was produced was practical and should be effective in directing change through the participants, especially since it included the school leadership team and an entire grade level of teachers. My unique role as a past teacher and administrator was a clear advantage in this case study.

Limitations

There were also specific limitations to completing this type of study. Glesne and Peshkin (as cited in Creswell, 1998) believe that there are distinct concerns with studying your own school. They argue that "studying such people or sites established expectations for data collection that may severely compromise the value of the data; individuals might withhold information, slant information toward what they want the researcher to hear, or provide 'dangerous knowledge' that is political and risky for an 'inside' investigation" (p.114) The teachers might not have been comfortable expressing negative opinions or criticisms, in fear that I would disagree or that I may be hurt in some way. Their normal behavior could have changed during their mini-department meetings because I was no longer working in the building and administrators are not always present for them, therefore reactivity could have been an issue. Another disadvantage could have been my deep familiarity with the site because it could have limited my ability to see things with a fresh eye, reducing the amount of rich description included in the study. Being cognizant

of these concerns, I included as many details as possible to provide readers with a clear picture of what occurred at the site during the data collection period. Finally, as the researcher, in the role of an administrator, I must acknowledge my own biases, especially in studying the school-level leadership aspects that impacted the teacher's educational practices. The natural interest in the success of implementing PLCs could have influenced the final conclusions of the study. These disadvantages were reviewed and managed in completing the study. In an effort to minimize the limitations, this study provided "a broad range of background features, aspects of the processes studied, and outcomes so readers have enough information to assess the match between the situation studied and their own" (Firestone, 1993, p. 18).

Validity

In order for any study to be viewed as valuable, researchers must demonstrate that their work is credible (Creswell, Miller, 2000). To achieve this, Creswell and Miller (2000) state that qualitative researchers often utilize a range of methods including member checking, triangulation, thick description, peer reviews, and external audits. These methods help the researcher increase the accuracy of their own work, while also providing the reader with the ability to assess the credibility. In order to ensure the credibility of this study, triangulation, member checking, and thick, rich description were utilized. Each of these is further described below.

Creswell and Miller (2000) define triangulation as a validity procedure in which researchers search for convergence from a variety of sources of information in order to develop themes or categories in a study. In this particular study, interviews, surveys, observations, and documentation were utilized to help develop themes regarding change in

pedagogy and assessment that occurred through the implementation of PLCs. Triangulation occurred by comparing diverse data. Using this method, the themes and information presented did not focus solely on one specific incident or data point, but instead on the compilation of findings from a variety of sources.

The second method utilized to ensure credibility of the study was member checking. This method required sharing data and interpretations with study participants to gather their input, corrections, and interpretations. The participants then had the opportunity to confirm the information and the narrative account (Creswell, Miller, 2000) as well as interpretations and conclusions. For the purpose of this study, each participant was given the transcript of his/her interview comment on and check for accuracy. They were also given an opportunity to review the draft chapter to provide corrections if they felt I misunderstood or misrepresented their thoughts. This critical step took place shortly after the interviews and transcriptions were completed and again as data analysis occurred. Through this process, I incorporated the participants' comments into the final narrative to provide readers with meaningful interpretations.

The final method of ensuring validity was implemented by describing the setting, participants, and themes in rich detail. According to Creswell and Miller (2000), the goal of utilizing rich, thick description is to create verisimilitude or "statements that produce for the readers the feeling that they have experienced, or could experience, the events being described in a study" (p. 129). Through the description provided, my goal was to help the readers experience what the teachers at CMS do to ensure understanding of the perceptions and actions of the teachers. As I gathered data for this study, I took detailed notes on the participant's interactions, experiences, and actions to help the story of the school come alive for the readers. The goal was to help the readers understand the credibility of the account

while also enabling them to make decisions about their ability to apply the information presented in their own school settings.

While I did not have prolonged engagement in the field as a researcher, I had extensive experience with this setting, as explained above. Creswell and Miller (2000) state that an extended period of time spent at a research site can help to develop a high level of trust between the participants and researcher while also building a rapport so that participants are comfortable disclosing honest feelings and perspectives. My eight years of work at Cherrywood Middle School built a foundation of trust that I built upon for the purpose of this research now that I have moved to another school.

The methods described above increased the credibility of the study. Without clear planning and follow through, this research was at risk of simply becoming one person's account of a specific site, experience, or event. Through the procedures of triangulation, member checking, and thick, rich description, an accurate portrayal of PLCs and how they impacted teaching practice was provided so that practitioners can understand how leadership supported PLCs and how they were beneficial to supporting teacher change.

CHAPTER IV

Findings

To explore the impact of the Dufour-Eaker model of PLCs at CMS, this chapter is broken down by the three research questions. Each research question is broken down into subsections based on recurring themes across the teams and/or departments in eighth grade. The first section identifies the four themes focusing on changes in instructional practice including higher order thinking skills and sharing resources; pacing; flexibility of classroom arrangements; and assessment. The second research question, and thus the next section of this chapter, focuses on what aspects of PLC helped encourage change in teacher practice. The themes include willingness to share, collective responsibility, and consistency. The final section focuses on contextual factors contributing to PLCs including professional development, leadership, and structure.

Changing Teaching Practice

The first research question investigated how teaching practice changed as a result of participating in PLCs. The interviews suggested that more change occurred in the teacher's instructional practices and pacing than in utilizing flexible classrooms. Also, teachers reported that the changes in flexibility were directly connected to instructional practices. This section examines changes in instructional practice and is broken down into two themes that were consistently mentioned during the interviews: higher order thinking skills and sharing resources within and among houses, before discussing the changes in pacing and assessment.

Higher Order Thinking Skills. Through the interviews, the teachers described ways they had changed their teaching to encourage higher order thinking skills. They did

so by changing the methods used, the kind of work assigned, and the levels of questions asked of their students. While they did not always identify them specifically as higher order thinking skills, their responses focused on this concept often. Higher order thinking skills include critical, logical, reflective, metacognitive, and creative thinking. Successful applications of skills result in explanations, decisions, performances, and products that are valid within the context of available knowledge and experience and that promote continued growth in these and other intellectual skills. Appropriate teaching strategies and learning environments facilitate their growth…(King, Goodson, Rohani, 1988). As the teachers were asked about their instructional practices and what changes they felt took place through implementing PLCs, they discussed what types of changes took place. A science teacher, Jenny, shared her thoughts,

> I'd say almost everything has changed. We change lessons every single year based on the conversations we have with our committees and departments. We've changed the wording of the questions, the activities we do, the levels of the questioning we ask it totally different now than it used to be – like the labs, especially the conclusion questions we created before. We look back now and they're so simple, there's no critical thinking involved.

As the teachers reflected on the changes, they found that over time a variety of changes took place through their PLCs. The leadership team initiated the use of Costa's levels of questioning so teachers were required to identify level 1, 2, and 3 level questions in their plans. Costa's level of questioning comes from Arthur Costa's Model of Intellectual Function in Three Levels from Developing Minds: A Resource Book for Teaching Thinking. The premise behind using Costa's levels of questions is that the higher the level of question, the higher the level of thinking and understanding needed to understand and answer it. By "providing examples of questions or stems of questions that require higher

order thinking and encouraging students to answer them independently, in pairs, or in groups" (Crowl et al, 1997), the teachers were helping students see the depth of their own understanding and ability to apply knowledge learned. In addition, the leadership team initiated two other AVID (Advancement Via Individual Determination) practices where they required the teachers to utilize Cornell Notes as the common form of note taking across the school and also identify how they integrate WICR (Writing, Inquiry, Collaboration, Reading) into each and every lesson. One team identified the need for a cross-curricular initiative because they realized that the students struggled with deeper thinking in their writing. One House 8-3 science teacher, Maggie, shared how teachers decided on an instructional strategy for their whole house,

> We talked about this think-aloud technique, because we said we feel as though the kids don't in their writing they're not thinking before they write. COSTAS level number 1, that's it, basic done. We said maybe we need to do more think-alouds with them. It was something we discussed—something that came out of a PLC meeting, because we said okay here's the aspect. You look at all of their test results and all of their daily work and you find that they are not doing deep enough thinking. How do we get them to do that? We have to model it. So we think aloud for them or with them. So now every subject in our house is doing a think aloud, probably twice, sometimes three times a week just to model for them, this is what you should be thinking prior to the written part. So I think hopefully that's making an impact on them.

King, Goodson, & Rohani (1988) cite the work of Crowl et al, 1997 and Kauchak & Eggen, 1998, in stating that one instructional strategy that helps develop individual learning and thinking capabilities is when teachers teach specific learning strategies by talking about the strategy, modeling it while thinking out loud, and providing opportunities for practice. One Humanities teacher shared how he helps develop higher order thinking skills within his students; he explained his thought process,

> That's when I think, now you've written it, and now I'm going to show you some models. I am going to show you what exceeds the standards, meets the standard, and what needs improvement, then I want you to go back to what you wrote and now see what you can fix. As you're editing it, what can you fix? As you're editing it, working with a partner, then doing it by yourself – then write a second draft and go from there. I feel like there's a process there, before they turn in a final draft.

Finally, the lesson format changed in the building to ensure higher order thinking and understanding in each lessons. A House 8-1 math teacher talked about the shift,

> I think there is a shift in the whole lesson from beginning to end. So, as far as before we used to just worry about the lesson, now we're thinking about – we call it the blast from the past – something they learned from last year, a NJASK skill from this year, and then the lesson. Making it more meaningful and then a summary at the end…like we're seeing the big picture instead. It's more in depth than it used to be. Before I think we were only just worried about the skills, teaching the skill, not their overall understanding.

This shift in their lesson plan model decreased the direct teaching time, increased time for guided practice, increased review and application of previously learned skills, and increased closure through various forms of summary to end the lesson. These strategies are critical in building higher order thinking skills among students.

In addition to the interview responses, the teachers were also given a survey in which they were asked how their practices changed since implementing PLC's. In focusing on instructional practice, the teachers were asked how much their teaching methods changed, how the activities and assignments for the students changed, and how their types of questions changed during this time. In terms of identifying change, the teachers were asked to choose between the following options, not at all, very little, somewhat, and a great deal in order to understand their perceptions regarding change occurring at CMS.

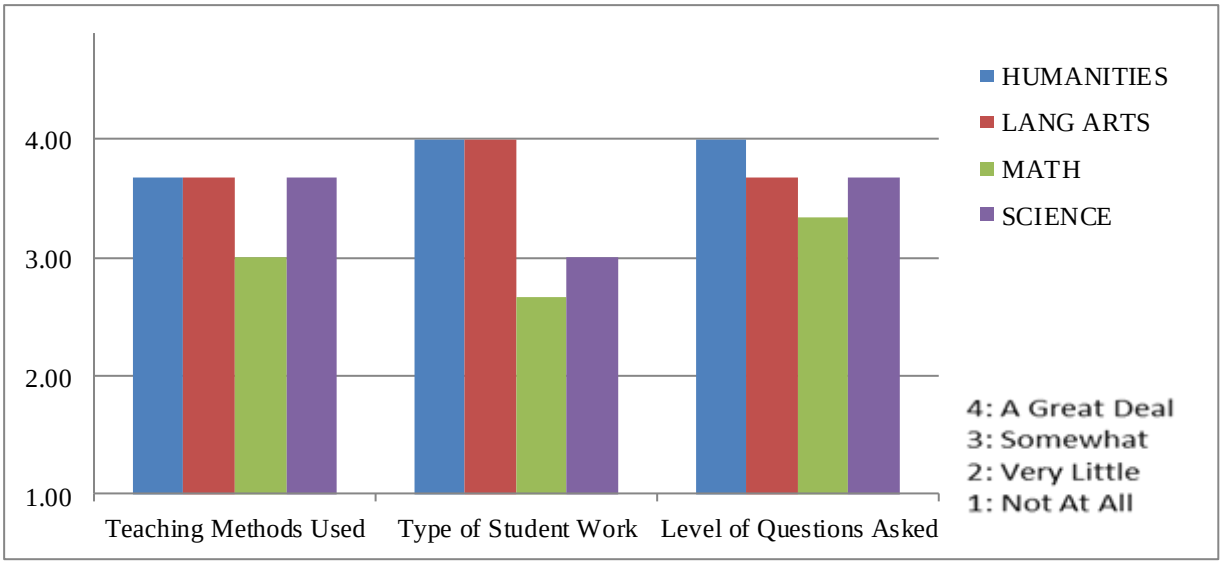

Figure 2: Level of Instructional Change by Department

According to the survey data, the language arts and humanities teachers reported greatest change in instructional practices. The least amount of change occurred within the math department, yet across all four departments the teachers felt the level of questions asked changed markedly. When a similar analysis was done to assess the change across departments, the great change in instructional practice occurred on House 8-2, while the least change took place on House 8-3. Teachers in Houses 8-1 and House 8-2 reported slightly more change than those in House 8-3, as seen below:

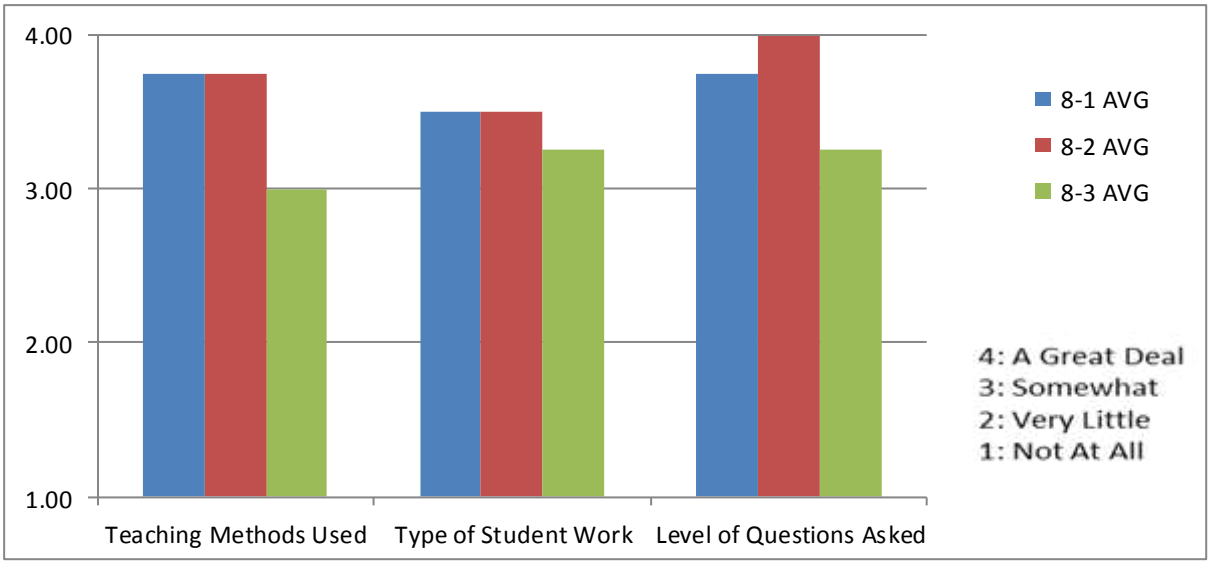

Figure 3: Level of Instructional Change by House

Through both the interviews and the survey, the data showed that instructional practices changed through implementing PLC's. At CMS, the change included increasing the higher order thinking that was occurring in the classrooms each day.

Sharing Resources. The second theme that emerged through the interviews focused on how the teachers were sharing materials and ideas regularly. Teachers found they were sharing best practices and lessons more consistently, developing joint lesson/unit plans, and raising the accountability for one another to meet the curricular expectations through the implementation of PLCS. The principal identified a necessary change that occurred through the department PLCs, he said,

> It's not like before, where one science teacher will say 'I'm doing this because I love it'. I'm doing astronomy, someone else is doing something with chemistry, and someone else is doing biology. Now, they all work on the exact same curriculum, the units, the standards, the activities, the assessments, common, formative, and summative.

Across all three houses, there was an increased level of curricular consistency across instructors. Due to that change, the teachers have found that they are more interested and willing to share their own lessons and expertise. One math teacher explains how she saw a shift in their collaboration through PLC's,

> I can only speak for the three of us in the math department and for my team, but I think it's basically just made us work together in different ways that we didn't before. We learn from each other different ways than I would teach, that they may have taught, and basically it improves all of our teaching because of the fact that we can see what other are doing – or communicate with others about how to teach a lesson or go over something.

One Humanities teachers explained how the process morphed and improved over time,

> Initially, we would share our best practices and our best units and just copy them. Then over time, we just started morphing them and changing them as our personalities and our teaching styles gelled. We started recreating everything – together. So every year, it's actually in a way more work, but less work, because you're doing everything new again, but you're doing it together. So it's actually creative and fun and it's not the same canned activity that you've used in the past.

One change that occurred through PLC's was that the teachers worked collaboratively to develop their unit and lesson plans together, providing an opportunity for them to share their ideas, materials and their questions with one another on a regular basis. Jennifer describes the dynamic among the three eighth grade language arts teachers,

> We're a very giving group. We don't like to say 'oh, this is mine, I don't want to share it with you'. We're very open to showing each other what we're using and what's working and what's not. So, with materials that we use, absolutely. We're constantly sharing ideas with each other.

Finally, the newest language arts teacher speaks about how they are implementing a new vocabulary curriculum in Language arts and how PLCs have helped them all meet the curricular expectations through supporting one another:

> In particular with my language arts PLC, most recently we started a new vocabulary curriculum, so we've been discussing a lot with each other how we're doing the vocab, how we're delivering it to the students, and we're using it every other day in class. So the feedback I get from Dana and from Melissa, who is in right now for Tanya, I use every day. I use it every day to deliver the instruction for the vocabulary – based on what we talk about.

Through the PLCs, there have been changes in instructional practice related to both individual and collective professional learning. The teachers have developed a stronger knowledge base by working with their colleagues. As they discussed their perceived changes in their instructional practices, they also discussed changes in pacing. This information is presented in the next section.

Pacing. As teachers were interviewed regarding how pacing may have changed due to PLC's, their responses varied by department and by possible curriculum changes that took place during the 2010-2011 academic year. The language arts curriculum has been consistent in the district for the past five years so the Language Arts teachers did not feel pacing was a critical issue. The three other departments had varying thoughts regarding pacing which were driven by the four critical questions of PLCs, as described below.

Humanities. For the humanities department, the focus during their PLC meetings had been on answering the question of "what do students need to know and be able to do?" so the teachers spent time reviewing the curriculum, as a whole, and chunking materials more efficiently to ensure they are covering the most critical aspects of the curriculum while also looking for ways to increase writing within the content. Identified as one of the core principles of PLCs, the humanities teachers spent much of their PLC time clarifying what students must learn by identifying the most essential skills and

concepts a student must acquire, as well as curriculum content that should be eliminated to provide more instructional time for what is deemed essential. The house 8-1 humanities teachers shared,

> We've actually done a better job trying to fit everything in. We've cut out some of the colonial information to make more room for the Civil War at the end. So the timing, the spacing is better and within each unit.

The house 8-3 humanities teacher's thoughts echoed those of his colleague, he explained,

> We're learned to chunk our information into what the big concepts are – we used to fill this part of the year from September until winter break with a lot more facts, nut not necessarily the concepts for US history. We never got the end…by changing our focus and reconstructing our curriculum with what we're going to focus on, we touch base on almost the same materials, but some become passing. So, now if we continue on the pacing that we're doing now, we'll reach the Civil War in April. That really allows us to kind of tie in our curriculum from the beginning of the country to this is where is ended up and how it mended and the direction it came to until today. So, it gives them something to go on when they get to high school.

During their PLC meetings, the teachers worked diligently in the past two years to identify the key concepts they wanted to make sure their students fully understood. He explained that they continuously ask themselves, "what are the important things that we really need to go in depth on without compromising the scope of everything".

Finally, the house 8-1 humanities teacher, Adam, explained,

> we are further along than we ever have been, which is great…but I also feel like I don't think we are teaching it so fast that the kids don't get it. If you set the expectations high, but you scaffold and model and make sure you're taking steps that they can be successful, you can move fast. I feel like we're been doing that, and that's been key.

The humanities teachers work together to discuss the essential standards, the instructional practices, and the materials used in their classrooms so that they can create a high rigor environment that supports the students.

Science. Just as the humanities department was clarifying their learning objectives, the science department was also focusing on the critical question of "what do students need to know and be able to do?" as their driving force. The science department received new resources this year and therefore found that they had to learn the materials as they went through the year. One Science teachers explained how the new materials caused them to modify their lesson formats. She explained,

> the new resources have every paper and every lab. They are all the same things we did but they are modified to fit into ten to fifteen minutes. So that you can do – everyday, we do a video clip or something online. [The students] will do a question, they'll do a bit or reading, and then we do a lab. Every day they are doing that because they've condensed it into smaller pieces so it fits.

According to all three Science teachers, they spent the year trying to stay ahead of the curriculum and the struggle they faced was the amount of information that was now available to them that would benefit the students, but making sure to focus on the core curriculum only. Maggie explained how the science teachers "felt a bit rushed" as a result of the new curricular materials provided to the teachers. She further explained how there are so many resources available to them within the new curriculum, that their focus has been on "picking and choosing what's going to apply this year and what they really like, therefore, doing the lesson plans together is putting three minds together" and also ensuring consistency in what is taught to the 8th grade students. In addition to the interviews, this was also observed during their PLC time. As they discussed their lessons, the additional resources that were available, and also as Peggy said "we really need to

move…we have to move in the curriculum. This unit is taking too long…" with a sigh of frustration. The pacing for the science department focused on learning the materials, revising their daily lesson organization, and selecting the materials that most closely connected to the core curriculum to meet student needs and also ensure meeting the curriculum goals for the year.

Math. For the math department, the teachers were focused on the critical questions of "how will we know when they have learned it?" and "what will we do when they haven't learned it?" When asked about pacing, the math teachers focused on using data to drive their instruction and the importance of providing additional support when gaps in learning were identified. One teacher stated,

> We're focused more on what the students are attaining, what knowledge they're attaining. We're looking at assessments a lot more to see what gaps are there, so that we can make those adjustments or add another lesson into the new unit or next year adjust the units so we can make sure the gaps are covered.

She further explained how she considers pacing when creating her lesson plans. She explains,

> I think now, it's a goal to do in my lesson plans. I have a calendar and I map out – I try to pre-map out the whole month so I can see what I cover. Now if the goal is attained or not, it usually isn't...usually, I'm a couple of days behind where I need to be. That is just a testament to trying to adjust according to the student's ability level. So that assessments definitely gear me towards my end goal…and how to adjust it. The important components [are] what they understand and what they don't understand.

The 8th grade math teachers plan together to make sure they cover the gaps that the students may have so that they are successful in understanding the concepts. Finally, the support of the math colleague teacher was identified as helping teachers with pacing in

comparison to the two other middle schools. She explained how "[the math colleague teacher] would tell us where the goal is so we can see how we're pacing with the other schools. Then [we] discuss with one another. We're always asking each other where are you at…we try to stay pretty consistently on the same path with one another".

In each department, the teachers used their PLC time to discuss their pacing to ensure that students were obtaining the intended learning outcomes. According to the leadership team, "the pacing has changed immensely, because now [we] have grade level colleagues doing similar things, but more importantly, [they] are guaranteeing each other that in a semester, [they are] doing these units". The principal further stated, "the PLC has driven itself where there's a guarantee where people begin and end…a guarantee of topics. So much so, that the 7th grade teachers now have a guarantee from the 6th grade teachers what the [students] will be coming to them with". Donna, the assistant principal, also expressed that the weakness in pacing lies in the vertical articulation between middle school and high school, not within the middle school alone. She said,

> For our transition from 8th to 9th grade, we no longer did personal essays in high school, but they're still doing that here. So, that's where the break in instructional mapping is taking place. We do heavy vocabulary [at the high school], which wasn't done here. That vertical articulation…, which needs to be a PLC between the two schools, will help out.

Flexibility of Classroom Arrangements. Pacing is a key component of PLC's that helped teachers to focus on the learning outcomes and then ensuring that students are learning and applying the knowledge gained. The next section provides information on how the teachers used purposeful grouping in their classrooms to match the changes in their instructional practices.

Humanities. For the three humanities teachers, their focus was on increasing student interaction and discussion as they focused their instructional objectives. The newest humanities teacher explained how he did not have the desks set up in a debate style while he was a sixth grade teacher, but when we moved to eighth grade and saw the setup of a colleague's classroom, that he was going to try to have more debates and discussions. He stated "I want them to basically talk to each other and not me". His fellow humanities teacher explained how he has "always had a kind of open class with a lot of student interaction – it's changed, the activities themselves changed, but the hands-on aspect of it hasn't necessarily". Finally, the third humanities teacher also had his room set up in a debate style and explained how he used to have them in rows. He explained how he does a lot more debating in his classroom this year based on their instructional objectives and joint unit plans.

Science. For the science teachers, their classrooms easily encouraged both independent and group learning because they have rows of desks in front and large lab stations in the back. The lesson format was similar for all three teachers, especially with the new resources provided to them so that they all began in rows for the interactive online materials and then move to the stations for the lesson's inquiry portion. One science teacher explained how she organized group work, she explained,

> I group the kids a lot of times according to their reading ability. I have them highlighted in my planner, in my attendance book that I want to put a yellow, a red, and a blue…or a yellow, orange, and a pink, so that every child is doing a task that fits them in a way that they are still inquiring. They're all inquiring about the same material, but the task that they have to manage fits their level. So those groups constantly change. So, I have one for a reading level, and I have another that is personality based.

Language Arts. Similarly, one language arts teacher shared how she learned more about this from her colleague,

> Even for myself, Jennifer and Dana both had done a lot with student grouping and arranging students – just having different groups – titles for groups. If they said that their students should go into their orange group today or their Mickey Mouse group today, the students wouldn't know it, but maybe the group would be based on ability. And the next day, they might be in their blue group and the blue group was a mixed ability group. But the students didn't know that as well. They did a lot with that and I hadn't done that before. I mainly would do random grouping. Some planning, but I did a lot of random grouping. I went and observed Jennifer doing that at the beginning of the 2010-2011 school year and watched her do that and then tried it out in my room. It was really nice and that was all part of the process too.

So, through their PLC time and through peer observation, the language arts teachers have begun using purposeful grouping and regrouping of students for particular instructional purposes and to meet a variety of instructional needs.

Mathematics. For the math teachers, their teaching styles varied based on the teacher but their method in handling POWER Math Fridays was similar. All three math teachers used Fridays to review typical misconceptions students have regarding specific math skills or to provide a spiral review using practice with word problems. All three teachers explained how they will put the students in groups of four so that the students can work together and check on one another while the teacher is circulating around the room. One teacher explained how "it's less teaching time and more peer teaching time which helps them retain the information because they teacher their partners".

In addition to the interviews, the teachers were also surveyed on the change in student grouping they felt occurred since implementing PLC's.

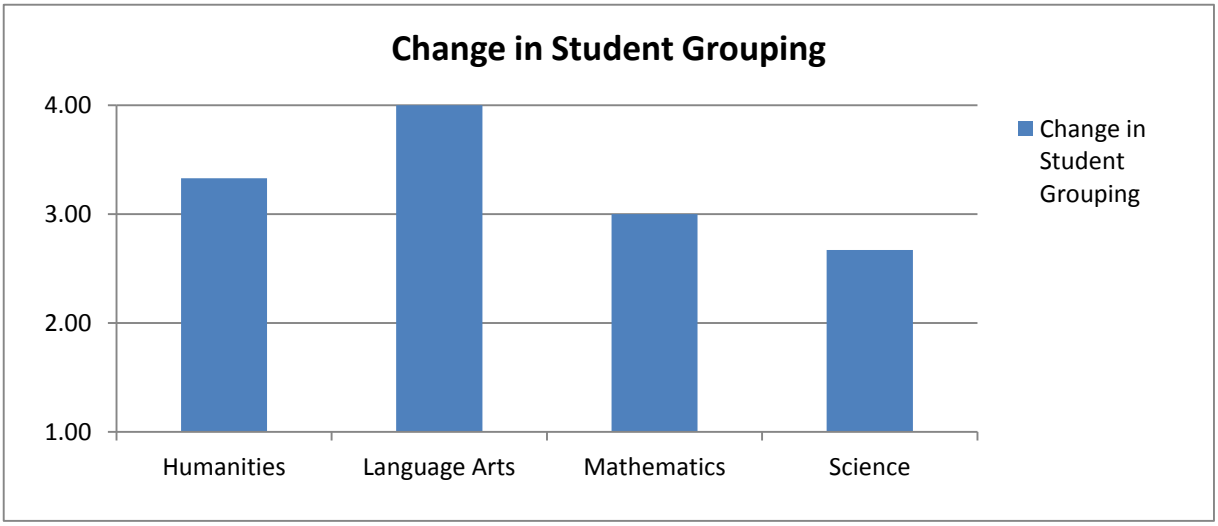

Figure 4: Change in Student Grouping by Department.

The survey data identifies the greatest change occurring in Language Arts and the least occurring in Science. This data fits with the interview responses where the language arts teachers discussed how they learned from one another through peer observation and have put purposeful grouping into place to meet the student's instructional needs. It also fits with the science teachers responses that their classroom setup including individual desks and lab tables in every science classroom had always encouraged purposeful grouping and therefore minimal change occurred for their department in this area.

In addition to the flexible grouping occurring in each department, there was also an increase in flexible grouping within each house. The middle school schedule allows for an advisory period every Wednesday and Thursday morning for 40 minutes and also each day either before or after lunch for 27 minutes. This advisory time is utilized by each house to provide intervention and enrichment to the students within their house. In addition to scheduling the time, additional personnel including special education teachers and world language teachers, is often available to the core content teachers to help ensure

smaller groups of students for advisory time. All three houses use their PLC time to discuss critical interventions and enrichment activities to meet individual student needs. One math teacher explained how her team used their last PLC time,

> [During] our house meeting, we're still developing specific strategies to help some of our at needs students. We're continuously trying to improve our intervention cycles, splitting [the students] up according to scores and trying to develop certain interventions to help them. (Rihanna)

The teachers continuously develop new intervention cycles based on student need, often teaching other content areas when necessary. One science teacher stated, "In our team meeting just last week, we were regrouping for the second half of intervention. So, the first half, we grouped them by language arts scores and we broke them down into sections by strand – and we all focused on language arts" helping the students realize that all teachers value reading and writing, not just their language arts teacher.

Finally, one humanities teachers spoke about their grade level PLC time that occurs once every three weeks. He explained how they used their time together,

> The last thing we did [during our full grade level PLC time] was we were discussing interventions actually. We were sitting in houses talking about what we're doing now and what direction we are going to go next…One of the problems this year we seemed to see was our kid's writing scores in particular, language arts scores, really are a trouble for us. We're concerned. So we've been trying to focus more of our intervention time on that, while still adjusting math. What way to group the kids was one of the things we did. Do we need to change that so that we can get more out of them? Is this going to help them more if we group them in a different way?

The teachers have shifted from a teacher directed to a student centered classroom environment. Since the implementation of PLCs, the teachers have become more flexible

and purposeful in their grouping and regrouping of students to meet individual student needs and to take advantage of small student groups for particular instructional purposes.

Assessment

Developing common assessments is a key component of PLC's through which teachers focus on the crucial question of "How do we know if our students are acquiring the intended knowledge, skills, and dispositions of this course, grade level, or unit of instruction?" Dufour et al. (2008) identified this as the "linchpin of the PLC process and a critical component of the work of collaborative teams". As CMS continued to move forward in developing effective PLCs, the school goals for the 2010-2011 school year were focused on formative assessment and differentiation.

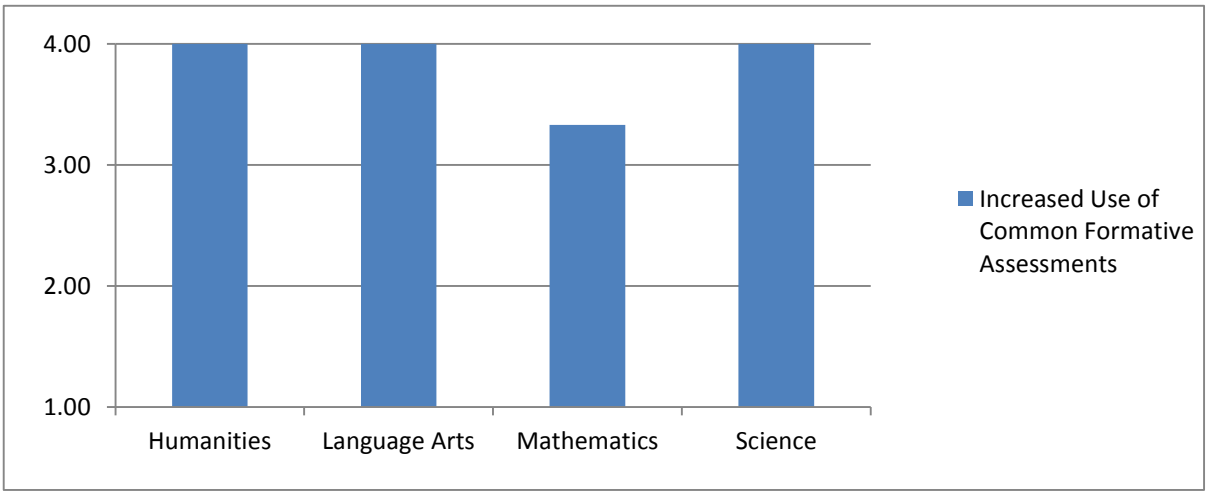

Figure 5: Change in Use of Common Formative Assessments by Department.

As seen in Figure 4, each department identified an increased use of common formative assessments, whether they were teacher created or district created. In addition, the departments indicated that they are using more frequent spot checks to help provide meaningful feedback to the students more often. One science teacher said that all three of

them are doing "more point checks, instead of giving the big test every three weeks, - every couple of days [the students] are given a little two to three question assessment". When asked if they sit down together to look at student work, one humanities teacher responded,

> Not formally, but informally we do. [The other humanities teacher] will bring papers over to me and I'll bring them over to him and say take a look at this, good and bad. I'll say my kids are having trouble with this, are your kids? He'll say yes or no and he'll say this is what he did. So we give advice back and forth during the process – sometime between periods, literally.

The Humanities teachers have embraced formative assessment and worked collaboratively during the 2010-2011 academic year to help the students grow. One veteran humanities teachers explained the process they used for a writing activity,

> Recently, we were doing a writing activity and Adam and I have collaborated on it from the beginning to the end. The question, it's a formative assessment, so the entire nature of this essay has changed. In the past, I think I would have had a question, given an essay, done an outline maybe with them, and then graded it. Here, we are breaking it down, chunking it, going paragraph by paragraph, giving [the students] lots of structure and lots of scaffolding. All three 8th grade classes are doing it.
>
> In this writing activity, we have a self-edit with focus areas where they self-edit themselves, then we give it to a peer where it is peer edited, and then they get to make changes. Then they give it to us and as a teacher, we actually edit it and give it back to them. This is not a final draft yet, and then they make their final changes and submit their final draft. So that's the summative, the formative is all throughout the process.

In the area of assessment, the teachers have begun using formative assessment on more of a regular basis but have not yet reached the full potential of utilizing assessment to improve instructional practices. The teachers are collectively gaining skills at assessing the students in more meaningful ways but need to continue building their skills at

disaggregating the data as a tool for ongoing improvement. Where one math teachers explains that the teachers informally "get together and try to pick those gaps and see where [the students] are still struggling to make sure they understand", this is not a consistent formal practice in the building. In line with improving their instructional practices through higher order thinking skills, the teachers have begun to ask better questions to assess their learning but need to move forward to the next step of using that information to develop a higher level of expertise and content knowledge through collaboration and analysis of results in meaningful ways. One science teacher discussed their process with assessment,

> We usually talk about assessment overall…how we're going to organize them, which ones we're going to give, and how we're going to grade them and point value. Then the activities we're going to do and the materials that we share. The last one, we actually set up pretests for the unit and a benchmark for the unit. We know the high schools do benchmarks, so we figured if we started doing it now, that at least they would be ready.

Where the researchers have identified specific steps that must be followed to properly develop and utilize common assessments, many teachers have developed critical skills in first agreeing on the standards and specifying the content, and kind of thinking that teachers would like the students to achieve. They have also worked together to develop the assessments based on the targeted thinking and content knowledge they want the students to know and establish a timeline for when the assessment will be given to all students. Yet the next critical step for the CMS teachers is to improve upon identifying the problems students are having with the content after analyzing the assessment either as a team or department so that the teachers can work collaboratively to develop solutions to the problems identified. The math teachers seem to be the furthest along in this process,

as observed during their PLC meeting with the colleague teacher. The math colleague teacher explained they were going to focus on analyzing the scores from the Measurement of Academic Progress (MAP) assessment that was given the week before. He had put together two reports for the teachers to review and discuss. As they sat in a circle, the teachers discussed what they observed in the reports including individual scores and percentile information per student, the breakdown of which questions linked with specific strands, and data on how students scored within the individual strands. They also discussed how the district norms were higher than the national norms and looked at the correlation between NJASK and MAP scores. The discussion then shifted to how one teacher is further along in terms of pacing and how that could impact student scores when comparing the three houses. Finally, the math colleague teacher explained that he just worked through this data with the two other grade levels, and that they would discuss it in greater detail during their next PLC meeting. He then shifted the focus away from looking at specific student data to teaching the teachers how to access specific reports of the MAP data. He modeled the process on the smartboard as the teachers observed, explaining how the student scores were broken down and how it was already prepared for the teachers. He always explained how the data was already broken down into the four power strands and how they could specifically click on a child's name and it would provide information about the skills and concepts that should be enhanced, developed, and introduced at various accuracy levels. Through this observation, it was possible to see how the math teachers were beginning to discuss student data and identify trends, but they had not yet discussed instructional practices to meet the needs of

struggling students. This next step will be critical as the faculty continues to move forward with sustaining effective PLC's that focus on improving student achievement.

PLC Contribution to Change

The second research question focused on understanding what aspects of the PLC contributed to the changes described above. As identified in the literature review, simply providing collaborative time for teachers to meet and identifying clear school goals, does not cause change in teacher practice or increase teacher learning. Specific factors need to be in place to encourage teacher change to occur. The next section identifies that the most critical aspect that allowed for change in teacher practice to occur was the culture of collaboration that existed and grew at CMS since implementing PLC's. Research indicates the importance of an open atmosphere in which communication, reflection, and a willingness to change is critical. Through the interviews and observations, this was clearly identified as the most critical component to the success of PLC's at CMS. The critical themes that helped develop this culture of collaboration included a willingness to share, a collective responsibility for the students, and consistency amongst the teams to increase both formal and informal collaboration within the building. These themes are discussed in greater depth in the next section.

Willingness to Share. One critical facilitator of a quality culture of collaboration is that individuals strongly believe in the value of sharing and learning from one another. As one language arts teacher explained,

> The school where I came from, there was no sharing whatsoever between colleagues. That was one of the biggest differences in moving from there to here…you can share with people and even if you don't take their idea completely, it stimulates you…

This learning environment in which individuals felt comfortable and confident sharing their thoughts, ideas, materials, and lessons was critical to developing PLC's. One language arts teacher shared how PLC time has encouraged a high level of collaboration and sharing of materials,

> I think we're a very giving group, especially with materials. We don't like to say 'oh, this is mine, I don't want to share it with you'. We're very open to showing each other what we're using and what's working and what's not. We're constantly sharing ideas with each other.

A humanities teacher talked about how their collaboration changed and grew from the beginning of implementing PLC's to now, where they are very much a part of the school culture.

> It gave us a time to collaborate. So that initially, we would share best practices, our best units, and copy them. Then over time we just started morphing them and changing them as our personalities and as our teaching styles gelled, we started recreating everything. So every year, it actually more work in a way, but less work, because you're doing everything new again, but you're doing it together. So, it's actually creative and fun and it's not the same thing…the same canned activity.

He also explained how they were still able to keep their own personalities as they shared with one another, he explained how "it's the same content, but I want to deliver it a bit differently…so you're still true to yourself, but you're unified on a team", thus showing the value of individual and collective learning. The math teachers also felt that the cultural shift that occurred was critical to their professional growth. One math teacher shared her thoughts,

> I can only speak for the three of us in the math department and my team. I think it has basically made us…work together in different ways that we didn't before, and learn from each other different ways that I would teach, that they may have taught, and basically it improves all of our teaching. We can see what others are

> doing or [we] communicate with others about how to teach a lesson or go over something.

Overall, all four departments discussed the importance and benefit of working with individuals that were willing to share with each other. Whether it was sharing materials, lessons, or new ideas on how to teach specific skills, the teams identified professional growth through collaboration. As referenced earlier when comparing the three houses in Figure 2, the differences followed the same pattern where House 8-2 showed the greatest level of collegial support in terms of sharing with one another while House 8-3 showed the least. The science teacher discussed how the culture shifted over time as PLC's were implemented and as individuals worked together more consistently, she stated,

> Self-reflection or evaluation, it was all independent before. Part of my team was here for a long time, at the time and part of it was brand new…both for the department as well as my team. You think about Tom and Mary, it just rolled with them, whereas Jill and I were fairly new and it was different. The same with science, Jenny and I were newer and Peggy has been doing it forever. So, it was sink or swim before, there wasn't a whole lot of group collaboration.

This shift from the sink or swim on your own to supporting one another has helped all departments and houses to develop a culture where a willingness to share their professional knowledge and materials is expected.

In addition to the interview data, the willingness to share was easily seen in the observations of their collaboration. During the language arts PLC time, Dana explained how she had begun the task analysis for a writing assignment. The four teachers sat at a conference table and she explained what worked well and what did not, how she taught the lesson while sharing specific details, and how she had a discussion with the students about the process. As she explained her work, her colleagues asked questions and jotted

down notes for when they taught the same concept. The discussion and natural sharing of resources and practices was easily seen through their PLC time together.

Collective Responsibility. Collective responsibility for the success of all students within a house was another cultural element that promoted effective PLC functioning. Collective responsibility can be described as having a shared ethos and using whole team discussions about the progress, successes, and weaknesses of individual students. Through the interviews, the teachers discussed how planning for the learning and teaching was the responsibility of all house teachers, not one specific content area teacher. One language arts teachers, Jennifer, specifically talked about how she worked collaboratively with the humanities teacher,

> We're talking about our interventions, like specifically me and Adam, because ours correlate with each other. He does the language arts portion with me. So, we're getting ready to start our next cycle…we're talking about what's been working with his, what's been working with mine, and where we want to go next. As a whole team, we're often talking about it together…

The teachers use their PLC time to discuss student's specific needs based on daily performance and the teachers support one another in doing so. On another house, a language arts teacher talked about supporting the student's needs,

> I feel like with my house, its data driven. There's a lot of intervention talk…if there is a student doing poorly across the board, we discuss what we can do to support him or her short of going to guidance or someone else. What can we do among ourselves?

By working closely together in meeting student needs, the teachers developed a collective responsibility within their PLC's. They made connections within their instructional practices that made it easier for the students to make connections to their learning. One

assistant principal shared an example of how the content area teachers were using the RATE formula to increase writing in all areas,

> Specifically in the past 5 years, that time has greatly affected the humanities and science teachers to understand exactly what about a reading prompt that students aren't necessarily getting. For a writing prompt, they have to truly answer and extend beyond their thinking. I think both science and humanities teachers are doing a better job extending their thinking using the RATE formula – as we use the RATE formula within all of their classes. In fact, I was just discussing the other day, a math teacher is trying to use the RATE formula within their own work when it comes to answering ECR – extended construction response questions. But they can relate to the rate formula that they're learning in their language arts, math, and humanities classes as well.

By meeting together, the teachers across all three houses were able to identify the individual and whole group needs of students, utilize instructional practices that were cross curricular, thus helping the teachers develop a collective responsibility to ensure student success.

Through observations of their PLC meetings, it was clear that the teachers believed in the importance and value of collective responsibility. As the humanities teachers met, they discussed an essay the students were going to begin that would be more challenging because it required more interdisciplinary skills of history content, writing skills, and reading comprehension to respond well. The discussion focused on developing a rubric for the writing assignment where they were assessing students on historical content and writing organization and structure. As the humanities teachers were looking to integrate language arts, the science teachers were discussing how to integrate and reinforce specific math skills. During the science PLC meeting, the teachers discussed balancing equations and how it was a great connection between science and math. Jenny shared a worksheet she had created for the students to practice

balancing equations as part of their review for the upcoming assessment. They also discussed how the worksheet could be modified for students with special needs.

Consistency. The final concept that came through from the interviews was the importance of consistency in team members. By working together over a period of years, their trust, willingness to collaborate, and their work continued to improve over time. One math teacher naturally shared, "Rihanna and I have been working together so long that she can come to me and I can come to her at any time and get anything from her. I'll tweak it, she'll tweak it, whatever". The importance of consistency was easily seen in the departments as the teachers learn how to support one another in developing sound instructional practices. As their responses to the first research question identified the teacher's increase in sharing resources and practices with one another, consistency played a key part in making that happen. Michael shared how they work together both in and outside of school to continue to improve their practice and also how their collaboration has grown over time,

> It has grown, it's not just during PLC time. Adam and I are emailing each other back and forth all the time. Rick is included in some of those emails as well, but Adam and I spend a lot of time creating things…he comes up with an idea and emails it to me, I change it, alter it, add to it, and send it back to him. He comes back and does the same thing. When something is presented…they've gone between Adam and I, two to three times each. Then we share it with Rick and Rick has input too…Adam and I have had five years, we've had a few years under our belts together, so we know each other a little bit more.

The humanities department has been together for the least amount of time which was evident from the statement above. They continue to work toward becoming a cohesive high functioning team as the three humanities teachers work together to consistently improve their practice. As the newest member to 8th grade, he was also the newest

member to House 8-3, so their level of collaboration was not as strong as the other two houses in terms of sharing materials or developing collective responsibility. The concept of consistency which was mentioned across departments, was also noticeable in the survey data within the houses.

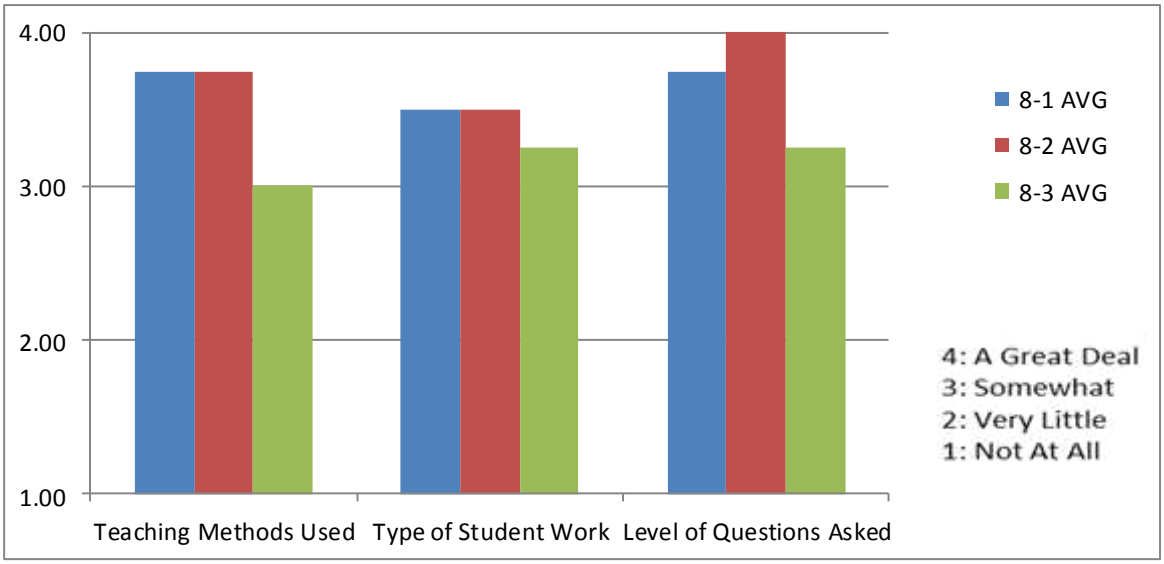

Figure 6: Change in Instructional Practices by House.

As shown in Figure 5, which identified the level of instructional change by house, more instructional change occurred on Houses 8-1 and 8-2, both of which had consistent membership over a four year span, while the least change took place on House 8-3, which had been working as a team for the least amount of time. Through the interviews and surveys, consistency was identified as a key factor that contributed to change at CMS.

Contextual Factors Contributing to PLC

The final research question focused on contextual factors that contributed to PLC's at CMS. The recurring themes included professional development, school structure, and leadership which are explained in the next section.

Professional Development. School leaders work towards enhancing professional growth for teachers by providing meaningful professional development. To move away from one-time disconnected professional development that is often not meaningful or valuable to teachers, job-embedded PD was developed and initiated at CMS. As part of daily practice the focus was on high-quality instructional development, during school hours, that directly linked to students learning. The teachers believed the greatest professional development came from faculty meetings, department meetings, and coaching through colleague teachers. Through the interviews, there was consensus in some aspects of professional development offered and disagreement in others. The principal described the school's professional development focus for the 2010-2011 school year as follows:

> The better professional development we have for the faculty is at the faculty meeting. Each grade level does a presentation based upon a book we're reading together. During the department meetings, we have a discussion about another book – a different book we are reading together. For example, the faculty is reading as a whole, Marzano's Classroom Assessments that Work and then as a department, we're reading, Wormeli's Fair is Not Always Equal. So, at the faculty meetings, different people do presentations about the chapter and then in the department meetings, we have pre-designed discussion questions that we kind of have a round robin during those department meetings in the morning.

In years past, the leadership team would select two other professional readings for the teachers to discuss through a similar process. The table below identifies the school goals in terms of professional development for the years during which PLC's were initiated.

Table 3:

Cherrywood Middle School Goals from 2007-2012

YEAR	OBJECTIVE 1	OBJECTIVE 2
2007-2008	By June 2008, 100% of the classroom teachers will be informally observed using an	By June 2008, all professional staff will conduct Action Research to develop relevant knowledge

	instructional and lesson plan format that will directly address higher order thinking and will provide teachers feedback on their pedagogy.	regarding Mathematics and Language Arts achievements.
2008-2009	By June 2009, all professional staff will be provided professional development during team/department times on the following best practices: WICR, Cornell Notes, Collaboration Activities, and Costa's Level of Questioning.	By June 2009, 100% of the classroom teachers will be informally observed and will discuss in a formal exit interview the use of the following best practices: WICR, Cornell Notes, Collaboration Activities, and Costa's Level of Questioning.
2009-2010	By June 2010, all professional staff will be provided professional development during team/department/faculty meeting times on the following researched based best practices: Marzano's Classroom Instruction That Works and Tomlinson's Differentiated Instruction.	By June 2010, 100% of the classroom teachers will be informally/formally observed and be required to discuss in a department, faculty, and critical friends meetings (sharing the wisdom sessions) on lessons learned from reading and implementing Marzano's Classroom Instruction That Works and Tomlinson's Differentiated Instruction.
2010-2011	By June 2011, all professional staff will be provided professional development during team, department, and faculty meeting times on the following researched based best practices: Wormeli's Differentiation from Planning to Practice as well as Moss and Brookhart's Advancing Formative Assessment in Every Classroom.	By June 2011, 100% of the classroom teachers will be informally/formally observed and be required to discuss in a department, faculty, and critical friends meetings (sharing the wisdom sessions) on lessons learned from reading and implementing Wormeli's Differentiation from Planning to Practice as well as Moss and Brookhart's Advancing Formative Assessment in Every Classroom.
2011-2012	By June 2011, all professional staff will be provided professional development during team, department, and faculty meeting times on the following researched based best practices: Wormeli's Fair is Not Always Equal as well as Marzano's Classroom Assessments that Work.	By June 2011, 100% of the classroom teachers will be informally/formally observed and be required to discuss in a department, faculty, and critical friends meetings (sharing the wisdom sessions) on lessons learned from reading and implementing Wormeli's Fair is Not Always Equal as well as Marzano's Classroom Assessments that Work.

By reviewing the school goals, there is a clear connection between the goals set and the learning that took place through the professional learning communities. While the teachers indicated through the interviews that they learned through the professional development opportunities available, the teachers were divided on their preferences in the method used for professional development during faculty meetings.

Faculty & Department Meetings. The teachers were very scattered in their beliefs in the value of faculty meeting chapter presentations. One science teacher explained why she enjoyed the faculty presentations on the reading,

> What's nice is everybody does their turn, everybody's been doing a skit…something just to make it a little more entertaining…and enriching. …we've been doing things to get people in the audience to answer questions, trying to make it a little bit more interactive…

She found it a way for the faculty to laugh and interact with one another while learning valuable information. A math teacher felt the faculty meetings were very informative,

> We're doing the reading in the books and I like the way the teachers get together and they present. It's a lot easier to understand when your colleagues are presenting then trying to understand completes what the book is trying to say sometimes. I've noticed sometimes I've had an idea what the book is saying, but when they present it, it's clarified a whole lot more than what I am actually reading.

On the other hand, one stated,

> Now the faculty meeting ones, I don't think are as formative for us…it doesn't seem like anybody is really getting anything out of them. It's like Charlie Brown to me – wuah wuah wuah – they're just standing in front of the room talking about something that we were all supposed to already do. I think it's in a more smaller setting , [like] in our math department it's more meaningful to all of us – not that we're more accountable for it, but we are…and we can relate to it more when it's in that setting.

It seems the 8th grade teachers were divided on whether or not the presentations were valuable, but there was consistency in their beliefs in the value of professional reading as a faculty. One humanities teachers said, "it creates a unified language and vocabulary across the staff, makes its blatantly clear what we're working on…it's there, it's not a question, no one is guessing", showing the value for this whole faculty professional

development. It also "brings a focus to the table, let[ting] us know that we're lifelong learners and we don't know it all".

In regards to the professional reading for the department meetings, there was also consistency amongst the teachers in acknowledging its value to their professional development. As stated above by one math teacher, there is greater accountability and more content based discussion about the readings during the department meetings. A science teacher explained how she would rather read the book and talk about it in small groups, as they do during department meetings. She further shared how she felt the book studies were critical to the success of the school and increased the value of their PLC meetings. She shared,

> I think the [book studies] force us to – and I don't mean forces us in a bad way – but I think it enables us the opportunity to talk about things that maybe we wouldn't think about before. I think [Kevin] chooses books that push that for us. Then he gives us questions to think about and Nick quizzes us and collects data. He sends us the results too. I think again, that's giving you something to think about.

Colleague Teacher. The other professional development and support discussed during interviews was also observed during one of the math PLC meetings; this was the benefit of having a colleague teacher that met with the teachers on a weekly basis. In the middle schools, the math and language arts departments each have a colleague teacher that meets with the district math and language arts supervisors for direction and then attends the PLC meetings at each school regularly. The colleague teachers for the district focus on the context of teaching various content areas and assist in the process of self-reflection and professional dialogue among the teachers to improve practice. Furthermore, the colleague teachers provide a means for altering the organization in a

way that improves the district as a whole, not just one specific school. The teachers identified the value and benefit of having this "point person". One language arts teachers said, "you can sense some confusion sometimes about what you're supposed to be doing on certain days from other departments and we never really had that because we had the colleague teacher. I guess that's kind of been the department head…" In addition, she felt the colleague teacher could "not only tie everything together, but also communicate things between buildings. I feel like a lot of what we are able to do with the LA department…happen because we were in constant communication with the teachers from the other buildings". This plays a critical role in pacing because the teachers across the middle schools will use each other as a gauge for where they should be in terms of meeting the curricular needs in one school year. Both the language arts and math teachers felt that having the colleague teacher at the PLC meetings helped keep meetings more structured, which was identified as a weakness for the humanities and science teachers when discussing leadership. One statement made by Maggie summed up the professional development opportunities available to them overall, she said "I don't think you can be a passive educator in this building and be effective. If you are, then you're jumping through some serious hoops in a bad way…" The positive impact of professional development for teachers as they work to develop meaningful PLCs was essential to working towards improving student achievement for all students.

Structure. In addition to professional development, the teachers identified the structure within CMS as a critical contextual factor key to the success of PLC's. Specifically, the teachers discussed how their classroom location and master schedule

contributed to the PLC's capacity to support teacher change but how the amount of time they had and often how it was used hindered it.

Classroom Location. The location of each classroom is rarely considered in planning for PLC's yet this aspect was mentioned by four teachers which involved collaborating with another four teachers from a different house. They spoke about how often they would walk across the hall or through the connecting classroom to informally collaborate or gain feedback on an instructional practice or question. Eight teachers were located close to grade level partners who taught the same content. The proximity of their classrooms increased the culture of collaboration in a way that allowed for immediate feedback and collaboration to occur more consistently throughout the day, not just during scheduled PLC meetings. One math teacher explained how she uses their classroom placement to her benefit for informal collaboration,

> Yes, well we were just discussing with the math department and especially since Abigail is across the hall, we always go across and check with one another, that some of the students – they're having the same gaps. We're trying to focus on those gaps every lesson. The collaboration is consistent with math.

Similarly, the two humanities teachers shared how they would often stop in to see one another between classes to ask quick questions about skills that students may or may not be struggling with just to gather quick ideas or solutions. Many teachers from House 8-1 and 8-2 explained how their instruction would change from one period to the next based on informal collaboration that occurred throughout the day, yet this was not possible for House 8-3 as their classrooms were located in a different hallway within the building. In addition to classroom location, the teachers identified the master schedule as being critical to the effectiveness of their PLC's.

Master Schedule. Currently, the master schedule at CMS includes a variety of collaborative time among teams, departments, grade levels, and as a whole faculty. These collaborative times include monthly faculty meetings, monthly department meetings, grade level meetings that occur every third week, and daily PLC meetings. The most consistent "collab time" is their daily PLC meeting which is 51 minutes per day spent with either their house teams or their grade level department colleagues. In addition to their scheduled PLC times, the master schedule includes a daily advisory period that provides time for intervention and enrichment within each house. One math teachers clearly indicated how critical teaming is in middle schools, she said "the fact that we are set up as teams with all other academics on teams in groups and have common planning time allows for [success]. I think if we were set up like a junior high school, we couldn't have PLC's at all". These periods of collaborative time amongst colleagues are critical, without this time it would be impossible to build a strong foundation for effective PLC's.

Time Utilization. The teachers identified their time for collaboration as a key factor to PLCs, yet they differed on their beliefs on how the time was utilized. Currently, each house meets four days per week and the 8th grade departments meet one time per week. One possible change that was mentioned frequently among the teachers was readjusting the time allocation regarding house and department time. Many teachers mentioned that switching to three days collaborating with their house and two days with the department grade level partners would be a better balance "because you need to talk about your kids…but you need to talk about what you're teaching the kids too" as one science teacher put it. She further explained her thoughts,

> I truly think that would lead the curriculum down a stronger path. If you were able to reflect on the lessons and plan your team – plan your department goals a little more succinctly, not so rushed. Okay, so what are we going to do? How are we doing to do this? Why do you think this didn't go as well? Sorry, don't have time, see you next week…

This thought process was mimicked by the humanities teachers when they were asked about the current PLC meeting schedule. One teacher shared, "I liked being able to go over things a little bit more with the department teachers and going over the content skills that we're going to be teaching". About three years ago, the teachers were provided with a schedule that included three house PLC meetings and two department PLC meeting each week and many believe that this schedule again would help them meet the needs of the students and the curriculum requirements to ensure student learning and preparedness for high school.

In addition to possible revisions to the PLC schedule, the other concern that was mentioned focused on how the time was utilized during PLC's. Peggy said,

> We had a good amount of time…sometimes [we would like] a little more direction on those mornings. When we're in team, we know what to do. When we're in departments, we know what to do. But when we go that morning [to grade level PLC's], what is it exactly you want us to do? Is there something specific you want us to look at? Or that you want us to do as you walk through and say 'everyone's here'.

The teachers seemed to be struggling with how to best utilize time provided. In addition to teachers feeling this way, the principal echoed similar thoughts when discussing their "sacred PLC time", he said,

> Just maintaining that time and using that time effectively, I think is an obstacle they are running into. Our teachers are so inundated with so many different expectations that I don't know if they're really giving all that needs to go into their PLC time. To really concretely use it to discuss and develop and implement

> activities and strategies, parent meetings, I'm not sure they're really using it to their fullest.
>
> Some teachers don't see it as sacred time, because they want to get parents to come in, they have to do their field trip work…they're doing the minutia about being a teacher. It's just a mindset, if we have this time together, this has to be sacred PLC time. People will say 'well, we didn't get this done, I didn't get this done', that's a hindrance. Until they see it as sacred time and not fill it up, that will hinder the progress.

In addition to acknowledging that they may not see it as sacred time, he also recognizes that they are often expected to do so much within their days that it can be difficult to be focused during that critical PLC time.

> The amount of time and the things we put on teachers' plates to get done eats away at true professional learning communities…PLC time isn't considered sacred time. It's used up for so many other different initiatives that have to be done within schools that it becomes extremely hard.

The use of PLC time is often strained due to district and school based initiatives, which minimizes its effectiveness. The teachers often mentioned not having enough time while also acknowledging that they have a variety of collaborative time available to them. The contradiction shows how they are not utilizing their PLC time effectively. It also connects naturally to the final critical factor of leadership as the direction for PLCs are driven by the school leadership.

Leadership

In addition to professional development and structure, both of which are driven by the administrative team, leadership was a critical factor in developing meaningful PLC's and will continue to be moving forward. Within leadership, two themes emerged from the interviews, focusing on consistency and administrative presence and guidance.

Consistency. Just as consistency among teachers was critical to the development of PLC's, so was consistency of the principal at CMS. One math teacher disclosed her thoughts on why consistency in leadership was critical – especially at CMS where years of inconsistency occurred before the current principal arrived. She stated,

> I think it's been great to have Kevin here consistently, because it's a huge adjustment to get a new administration…It's nice to be consistent across the board with your teachers and with the administration – so everybody is at the same point. You don't have to start over. It's nice to have fresh ideas, but it's a huge adjustment when you get that new administrator. Okay, what's different between this one and the last one? How do we keep him up to speed as to where we are? What new things does he want us to implement? It was completely different so I think it was great to have consistency.

The same message was echoed among the humanities teachers in saying consistency provided "continuity and I think sticking to it, setting the expectation and not wavering…in a supportive way too, in a very supportive way". The supportive style of the leadership team was critical to developing the culture of collaboration that exists at CMS, one math teacher explained how every meeting ended the same way, "there's always a part at the end, where [the leadership asks] do you have any concerns that you would like us to properly address? Or any concerns that you want us to try and to figure out what to help you with?" so they are consistently open to questions or concerns for the betterment of the school. One language art teachers was frustrated with a time prior to the consistent leadership, she explained why the consistency was so beneficial,

> I think number one is consistency. Again, I don't have the years exactly correct, but from 2004 to approximately 2007, the number of assistant principals, I don't even think I could count them – I would need at least two hands…I think the consistency was the key. You were there a long time, Kevin has been there since I started, as an assistant principal at the time, then moved to principal. That just

> says something…when you know somebody is invested in the building and invested in the school, it makes you want to be more invested...

The consistency of the principal was a key factor in helping move CMS forward. This also impacted the implementation of PLCs at CMS because two years after the initiation of PLC's one assistant principal retired. The following year, I was promoted to principal at another school therefore causing inconsistency in part of the leadership team again. This change weakened the school and demoralized the PLC Academy teachers because I was the administrator that met with them monthly to develop the professional development focused on understanding and implementing PLC's. The consistency of the principal became even more critical during this time as a new team was developed to lead the school and as the teachers worked through these transitions over the last few years.

Administrative Presence & Guidance. While the teachers praised the leadership team for their consistent and supportive style, the majority of teachers also mentioned the lack of administrative presence at their grade level, house, or mini department meetings. Through the interviews it was clear to see that the leadership team did not attend meetings "as often as I and the other teachers would like". With the variety of collaborative time provided for teachers, one teacher explained the presence at various meetings and their lack of presence at others. He explained how an administrator is always present at monthly faculty meetings and department meetings, but "the one that happens for the whole 8th grade in the library, there's never been an administrator for that. Our weekly grade level department meeting, no one has ever come this whole year. As far as our team meetings go, they are supposed to come every Monday, and have been there maybe twice". The frustration from the teachers in terms of leadership has grown from their lack of presence and guidance during PLC meetings.

The other concern that stemmed from the lack of presence was the need for additional guidance on how they should be using specific PLC time which was mentioned by three departments. One teacher revealed her own uncertainty,

> They walk through I guess, just to make sure you're there. Sometimes we'll sit there and say, should we meet as a team or should we meet as a group? Like 8th grade meeting because we kind of do the same things. Last time we [spoke] about intervention that you have to do as a team. That's pretty much what we've done the past couple of times. There's no one there saying 'All right, let's talk about this or let's talk about…' We just kind of go…

Her sentiments identify a need for more direction from the leadership team so that they clearly understand how this additional collaborative time is to be used. A similar sentiment was echoed regarding the structure of PLC time and whether or not the teachers are focusing and using the time effectively. She said,

> The time is not structured. In the sense that you've got 45 minutes, the structure is made by the teachers. If you have…an environment where some teachers don't take it seriously or don't think they need it or don't think they need to talk about it and want to talk about other things. I think the loss of structure can hurt…

Finally, one science teacher indicated that administrative presence and guidance would help increase accountability for the teachers in ensuring proper time utilization to get the most out of their collaborative time.

> There is so much on our plates not that [PLC time] is the easiest thing to spend less time on because it's almost not a check mark of things we have to do. It's like we're focusing on it, but we can focus on the surface on certain things and not spend as much time as we could…

As the teachers realize that PLC time is not being used effectively, they seemed overwhelmed with the amount they needed to do and how to use their PLC time productively to accomplish everything. The teachers across all three houses felt they

would benefit from greater administrative presence at their meetings and guidance on how to best utilize their PLC time to ensure the greatest level of success.

Clearly, professional development and school structure are critical factors driven by the leadership that can either support or hinder the PLC's capacity to support teacher change. When meaningful professional development is provided in an effective school structure, the leadership team has the ability to drive the direction of the school towards significant change. In order to do so, their consistency, direction, and presence is key so teachers feel supported through the process of sustaining PLCs to improve student achievement.

Conclusion. This chapter summarized the instructional changes that took place in CMS, and factors that supported those changes. The PLC structure initiated and supported meaningful changes to practice that improved the learning for students. The chapter began by looking at the benefits of PLCs on teaching practice and finished by looking at what can be learned about how the PLC can effect these changes. By working together in teams with structure and leadership, teachers worked collaboratively to improve their instructional practices, more specifically by increasing the use of higher order thinking skills. Within their teams, they increased their sharing of resources which lead to a greater level of curricular consistency, as identified by the teachers and the administration. In addition, teams were able to increase and strengthen their knowledge base, simply by working mindfully with others. The collaborative structure of the PLC model helped teams with instructional pacing, though it needs to be noted that one team benefitted more than the others for a variety of mitigating circumstances which were identified. Though the teams thought the PLC structure would help with flexibility of

classroom arrangements, this was not fully realized; however, the PLC structure was significant in improving assessment practices. Teams were able to meaningfully examine and work with assessment and realize the value of formative assessment for both the students and themselves. The PLC structure did much to benefit the instructional practices of participating teachers.

The second part of this chapter examined how the PLC structures impacted instruction. The structure itself – designated time to work in defined teams focused on student learning – increased the willingness of teachers to share, improved consistency between teams, and developed a culture of shared responsibility of students between teachers. It is important to have an open atmosphere of communication, reflection, and a willingness to change, but such an atmosphere can be difficult to create. This can only be developed over time and if a structure conducive to meaningful collaboration exists. This section explored some of the ways to increase the effectiveness of such collaboration, such as consistency amongst the teams, clear protocols, and classroom location. The final section of this chapter took this exploration further to look at the contextual factors contributing to successful PLCs. Having a shift of professional development from ineffective one-time, disconnected delivery to job-embedded practice and reflection can do nothing but improve teacher practice. The PLC structure and investment put the focus of daily practice on high-quality instructional development, during school hours, to develop direct links to student learning.

The section concluded with observations that would help to improve PLCs. Although integration of the goals with faculty and department meetings can be valuable, they need to be thoughtfully designed and delivered. Having specific colleagues

designated to support the work of the PLC helps to build a bridge between individual teachers and provides support in finite areas for individuals and for the group. Finally, the chapter identified factors that were key to a PLC's success. Classrooms of teachers teaching similar content should be as close to each other as possible in order to encourage both formal and informal collaboration. The master schedule was critical and could easily aid or hamper effective PLC development and work. Effective use of allocated PLC time was very important and often depended on the leadership within each team. Having consistency in the members of each team over time was helpful and, somewhat surprisingly, it was identified by the teachers that participation from the formal school leaders would help improve the effectiveness of a PLC.

In all, this chapter pulled together the research that had been completed and demonstrates the benefits to teaching that effective PLCs provide. It also demonstrates some key elements and structures that support and improve PLC work. A PLC can be the most powerful tool we have to improving student success, if it is done well.

CHAPTER V

Discussion

This research study was specifically designed to highlight on the PLC at one middle school, in hopes of adding to the research base on PLCs while also providing specific feedback to CMS as they continue on the PLC journey. The literature review focused on the Dufour-Eaker model that proposes a way to organize schools, that when done with fidelity, has the power to drive success in schools. Key aspects of the Dufour-Eaker model of PLCs include increased collaboration, an increased focus on results, and an increased focus on how to view and review data to drive instructional changes to best meet the needs of current students. By thoroughly understanding those ideals and then studying how the instructional practices changed and what caused those changes, all give an accurate account of where CMS is on their journey towards using PLCs to drive their success.

Overall, CMS began building the foundations of a true professional learning community in the first two years of implementation. The study showed that inconsistencies existed with implementation among the teams and dedication to the model utilized in the district and at CMS. In order for the school to continue moving forward with effective implementation of PLCs, more professional development and a whole school review of what it means to be a PLC at CMS. Through this process, many strengths and weaknesses discovered were critical to the how the changes occurred and why. The next section summarizes findings about implementation of the core principles of PLCs at CMS. These include a culture of collaboration, ensuring students learn, and a

focus on results that impact the changes in teacher practice and leadership. Subsequent sections identify implications for PLCs at CMS and future research issues.

Implementation of Key PLC Principles

Culture of Collaboration. Collaboration is defined as teachers working together to clarify what student must learn by identifying the most essential skills and concepts a student must acquire, as well as concise curriculum content maximizes instructional time for what is deemed essential. The Dufour-Eaker model identified a shift from working independently to working interdependently, from focusing on individual goals and personal agendas to fulfilling common goals and a collective purpose (2008). Through the study, one critical factor in developing a high level of trust among the teacher teams came about from the PLC's. The house teachers had opportunities to get to know one another as colleagues and as friends, which helped build a greater level of trust over time. Over time, the teachers at CMS developed a greater willingness to share materials, resources, and their own thoughts and questions with each other through their PLC meetings. They also developed a collective responsibility for the success of all students through this process. This shared ownership in success became the foundation of their collaborative time where they met to discuss the progress, successes, and weaknesses of individual students. In addition to the trust among the teachers, the consistency of the principal also maintained a positive level of trust as the transition occurred with the assistant principals.

Ensuring Student Learn. The second core principle focuses on student learning, which in turn impacts teacher practice. Teachers need to shift from teaching to learning,

where every teacher focuses on meeting the needs of each student. Previous research showed that significant improvements occurred when teachers worked in teams or learning communities that focused on instructional practices that impacted student learning (Supovitz, 2002; Supovitz and Christman, 2003; Phillips, 2003). Changes in teacher practice occurred, within all three eighth grade houses, improving their instructional practices. More change occurred in instructional practices and pacing than in utilizing flexible classrooms. These changes caused an increase in the use of higher order thinking skills in the classrooms and an increase in the sharing of resources among the teachers. As teachers worked together to identify learning outcomes and find ways to ensure student learning, the pacing varied, as did their classroom organization. The teacher learning shifted over time from knowledge-for-practice to knowledge-in-practice and beginning to encourage more knowledge-of-practice, in which they are using their own classrooms for inquiry to construct and reconstruct information to better their practices.

Dufour, Dufour, and Eaker (2008) found that collaborative teams engaged in collective inquiry by focusing on the four critical questions of PLC's. At CMS, the teacher's understanding and focus on the four questions varied during the five year journey. Initially, the PLC Academy team was providing professional development to the teachers during faculty meetings and in-service days. They initially worked to build teacher capacity and the understanding of the core principals of PLCs and how they relate to the four critical questions that drive the actions of PLC's. As this professional development ended, teacher comprehension of PLCs appeared to lessen over time. The teachers were able to grasp instructional practices based on book studies, but never

forged the deeper connections of how their learning could support one another in identifying learning outcomes, checking for understanding, responding to struggling students, and enriching learning as necessary.

Focus on Results. The third core principle of PLC's highlights the importance of teachers focusing on results to gain ongoing feedback throughout a unit of study. Teachers must work collaboratively to disaggregate and analyze student data to drive instruction. At CMS, some growth occurred in the area of assessment where teachers began to use formative assessments more consistently. As part of the 2010-2011 school goals, the teachers were required to develop four common formative assessments within their content area, yet this continues to be a weakness of the PLCs at CMS. While they began utilizing formative assessments, progress was still lacking in analyzing the data in meaningful ways to drive instruction based on student need. Dufour and Dufour indicated that "substituting textbook assessments, commercial assessments, or occasional district assessments in place of team-developed common assessments, using common assessment results merely to assign grades, and doing nothing with the common assessment results" (Dufour, R., Dufour, R., October 15, 2012) were three key practices that undermined the PLC process involving assessment. At CMS, there is currently no consistent and formal practice advocating that teachers fully analyze the data to identify concepts or skills students did not fully understand or to identify areas that certain teachers may teach more effectively than their colleagues. Over time, their collaborative efforts to focus on results in a meaningful way were not maintained, and teachers often struggled with how to best utilize their collaborative time to meet students' needs.

The three core principles are critical to implementing effective and meaningful PLC's where the focus is consistently on meeting the needs of all students. In addition to the three core principles, leadership plays a crucial role to provide the necessary structures, strategies, and supports (Supovitz & Christman, 2005) to help teachers build their knowledge base. The next section focuses on the role of leadership in implementing and sustaining PLC's at CMS.

Leadership.

Leadership is a critical factor in developing meaningful PLC's and continues to be at CMS. During the PLC journey over the last five years, the formal leadership team changed leading to a critical piece of their success. While the principal remained constant, the two assistant principals changed. This transition led to a critical loss of knowledge in the leadership team. During the first two years of the PLC initiative, the vice principal regularly provided the faculty with professional development on what PLCs are, what purpose they serve, and the benefits found in other schools. The PLC Academy teachers met regularly with one assistant principal, who attended the Solution Tree training. Together, the committee planned professional development based on the questions they received during their own grade level meetings or based on the ongoing professional development that was provided to the district by Solution Tree. After those two years, the leadership team changed because the two assistant principals were no longer at CMS, and the new assistant principals did not receive the adequate PLC training. As this shift occurred, the PLC Academy did not continue to meet and the professional development shifted to specific skills without any ongoing professional development on PLCs. As the goals for the building were set by the leadership team, the

teachers would focus on learning and implementing best practices including increasing higher order thinking skills and the use of formative assessment but lost the value of PLC to drive the understanding of these instructional practices even further.

Within leadership, specific factors are identified as being critical to supporting teachers through the implementation of PLC's. This includes developing a clear vision and goals, providing common planning time, increasing job-embedded professional development, encouraging trust, and building teacher leadership.

Clear Vision & Goals. While developing a clear vision and aligned goals was identified as an important step school leaders must take to encourage school improvement, it seems to be a weakness of the PLC initiative at CMS. Many teachers felt they were not provided the critical guidance and leadership needed to best utilize their collaborative time to improve instruction. They often felt that they were provided with the time and space to meet, with no clear direction on how to best utilize the time. The teachers struggled to see the shared vision of what PLC's are and what purpose they serve in helping to improve both student and teacher learning. The teachers often mentioned the lack of administrative presence at their collaborative meetings whether it was as a house, as a mini-department, or as a grade level. The involvement of the administrative team could help the teachers understand the vision and value of PLC's at CMS.

Common Planning Time. The second factor involved providing the teachers with structural supports including collaborative planning time. The leadership team provided the teachers with critical supports including a master schedule that allowed for

multiple opportunities for collaboration as a whole faculty, as departments, as grade levels, as teams, and as grade level departments during their contractual day. Identified as a key component of PLC's, the leadership team provided collaborative time for the teachers, but the collaborative time was not always used in the best possible ways. Dufour and Dufour deemed the term "collaboration lite" where teachers were using sacred PLC time for tasks such as administrivia, field trips, etc. (Webinar, October 15, 2012). Most teachers agreed that they needed to revise their schedule to best utilize their PLC time. The teachers currently meet with their house four days per week, and their grade level content partners once per week. The teachers agreed that they would benefit from meeting more with their grade level content partners more often to discuss learning objectives and create and analyze common assessments. They believed at least two days were critical for the teachers to meaningfully utilize PLC time. Every teacher saw the value of collaborative time, but they often struggled with the expectations of how the time was to be utilized, once again connecting to the critical role of the leadership in making collaboration among the teachers meaningful, engaging, and relevant.

Another support that was put into place involved the locations of individual classrooms. Many teachers mentioned that in addition to their formal collaborative time, they also found themselves collaborating informally with their content area partners based on classroom proximity. Teachers explained how they would have quick conversations about instructional practices or student concerns between classes because their classrooms were either next door or across the hall from one another. The administrative team purposefully made that change five years ago so that teachers would be closer to one another by content and by team. This structural change increased the

level of collaboration, both formally and informally, for two of the three teams. This type of change in terms of collaboration was not possible for the third team as they were located in a different wing of the building. While this type of support was not discussed in the literature review or mentioned in the Dufour-Eaker model, it was a key factor in increasing collaboration among the two teams.

Job-Embedded Professional Development. The third factor focused on providing meaningful professional development to help teachers focus on high quality instructional development that links to student learning (Dufour, 2004) through PLC's. In order to do so, the teachers needed professional development on understanding the purpose and value of PLC's and also on teaching and learning. At CMS, there was consistent professional development on teaching and learning, but the professional development on PLC's did not continue after 2010. The previous administrative team drove the professional development on understanding what professional learning communities were and why they were critical to student success and teacher growth. Once that administrative team was no longer at CMS, the PLC Academy teachers no longer met monthly to discuss where teachers were with their understanding of PLCs and therefore did not continue the professional development on understanding the depth and value of PLCs. The teachers were not ready for this shift where the focus was fully on teaching and learning without understanding how PLCs would be the vehicle for teacher improvement and student learning. On the other hand, the teachers did feel there was a great amount of professional development built into their work day through the faculty meetings, department meetings, and coaching opportunities through the colleague teachers. For the teachers, the discrepancy came about from the method used for

professional development during the faculty meetings. Many studies indicated that leadership encouragement and support caused an increase in willingness for teachers to talk about teaching and learning, participate in peer observation, and plan, design, and evaluate curricula (Sargent & Hannum, 2009; Barth, 1990; Deal & Peterson, 1990; Dufour & Berkey, 1995; Wineberg & Grossman, 1998), and this was the case at CMS. A connection was found between the yearly goals set and the learning that took place through the professional learning communities.

The other concept that was not discussed in the framework was the impact of colleague teachers to PLC's. At CMS, the department colleague teacher position was mentioned as a benefit to the teachers in both the mathematics and the language arts departments. The colleague teacher was critical in providing focus and direction for the PLC meetings and also assisted the teachers in the process of self-reflection and professional dialogue. There was also a benefit to the district as a whole where the colleague teachers were able to discuss the pacing across the three middle schools and also bridge the transition between middle school and high school when necessary. The teachers in the math and language arts departments felt the colleague teacher provided a necessary structure to their PLC meetings, that the other departments lacked.

Trust. The fourth factor identified as key to leaders building effective PLC's is encouraging trust within the school. By building a positive atmosphere focused on trust and collaboration, teachers were more likely to build meaningful relationships that encourage professional growth (Stoll & Fink, 1996). It is critical to consider the trust between the leadership team and the teachers and also among the teachers themselves. When focusing on the trust between the administration and the teachers, there was a

disparity within the leadership team. Teachers identified a high level of trust with the principal due to his supportive nature and consistency at the school since 2005, but did not feel the same level of trust with the assistant principals. As mentioned previously, the assistant principals have not been at CMS for the same timeframe and need to continue working on developing positive and trusting relationships with the teachers over time. Highly respected principals and assistant principals make sure to demonstrate honesty and follow through on commitments in order to earn teacher respect. By modeling the behavior they expect of the teachers, they set the tone for the building. At CMS, this must include attending, participating, and supporting the work of the PLCs. When focusing on the trust amongst the teachers, the culture of collaboration has grown immensely since implementing PLC's at CMS. The teachers are more willing to share with one another and have developed a collective responsibility for the students. The school administration does need to be cognizant of the difference in developing a school that improves the day to day life in school as opposed to colleagues working collaboratively to focus on specific learning outcomes (Furman-Brown, 1999). As mentioned above, the teachers have made progress over the past few years, with occasional uncertainty on how to best utilize their collaborative time together.

Teacher Leadership. The final factor focuses on encouraging teacher leadership to improve the school and overall student achievement. Supovitz' research (2002) identified that team-based teachers are more involved in school-based decisions and this was the case at CMS. The teachers were involved in selecting various pedagogical strategies, improving the curriculum, and sharing instructional practices. The teachers were given the flexibility within their teams to identify how to best meet student's needs.

One the other hand, the teachers were not involved in the process of goal setting for the school each year. The goals and the book studies were usually decided by the administrative team. The greatest area of need is developing a greater understanding of the value and purpose of PLCs by building teacher capacity. Black (1997) stated that in order for teachers to behave and regard themselves as professionals, the principal should establish authentic processes to involve teachers in decision making (as cited by Buffum et al., 2008). By developing shared leadership, the teachers would feel more confident in their roles in driving their PLCs to meet student's need while continuing their own professional growth.

Leadership in school is critical to the success of any reform as they have the ability to create the best conditions for growth and improvement within a school. In developing effective professional learning communities, there are numerous factors that principals and leadership teams must consider to truly focus on improving student and teacher learning.

Implications for Professional Learning Communities at CMS

The next section focuses on implications for professional learning communities at CMS specifically looking at what next steps need to occur to assess the current PLCs, and continue to show growth in their PLCs. There are specific steps that need to be taken by the administrative team and specific steps that need to be taken by the teachers in order to continue developing effective PLCs.

CMS needs to reinstate administrative involvement in its existing eighth grade teams to support the teacher's understanding of PLCs. The existing PLC's

need administrative guidance in order to be effective and focus on teacher learning and student achievement. Professional development on PLCs is crucial for the assistant principals as they were not present for the district-wide training many years ago. To support the grade level PLCs, the administrative team must have a deeper understanding of the value and purpose of PLCs. The professional development for the leadership team should include understanding, leading and managing organizational change, creating and managing student and adult accountability systems, and mentoring and coaching as identified in the book Leading Learning Communities: Standards for What Principals Should Know and Be Able to Do (2008) to support the PLC initiative at CMS. Even after this deeper understanding exists within the administrative team, continuous administrative involvement in PLC's will be crucial. It is not enough to start a PLC and then stand back and assume that it will function well on its own. While administration can gradually take less of a leadership role in PLC's, the experience at CMS affirmed the need for school leaders to continue to participate in the living PLC to help guide, support, and encourage the teachers in their development and their ability to support student learning.

This study only assessed the current PLCs at CMS in eighth grade. The administrative team would benefit from completing a whole school needs assessment to truly assess teacher understanding of what it means to be a PLC. One way for the school to begin this process is by using the four critical questions to assess their PLCs. By working with the teams and grade level partners to answer these questions, the administration and the PLC academy team can begin to better understand where the schools strengths and weaknesses are.

The first critical question is “what do students need to know and be able to do?” At CMS, over the last five years, certain changes took place that help show the teacher’s understanding of PLCs. One critical change was teams of teachers immersed in professional development to build a shared understanding of what students know and should be able to do. They agreed on certain instructional practices including increasing the use of higher order thinking skills in their planning, activities, and assessments. In addition, the school leadership ensured that teacher teams had collaborative planning time on a regular basis. Currently, their schedule allows them to meet collaboratively daily, which is critical to having teacher teams discussing instructional strategies and student performance.

The second critical question is “how will we know when they have learned it?”. This is a key component that the teachers at CMS need to continue building upon to ensure that all students are learning the agreed upon curriculum. At CMS, the teachers have worked collaboratively to develop common formative assessment, but have not necessarily taken the next step in using them to monitor student progress carefully on essential outcomes. The common assessments need to be analyzed more systematically to identify students that are deemed proficient and not proficient. Teachers should be looking for patterns that suggest that specific instructional practices are effective and should be maintained or expanded or patterns that identify a challenge that needs to be addressed. Identifying trends, determining possible causes, and suggesting possible solutions becomes critical when focusing on the third question. This critical step of analyzing the data from both formative and summative assessments is key to student success and teacher growth.

The third critical question is “what will we do when the students haven’t learned it?”. CMS, and other schools, would benefit from understanding how formative assessments and other sources of data are used to identify students who may need additional support to meet the learning outcomes. The school needs to clearly identify whether or not there is a school-wide systemic response to providing that additional support to the students because it should not be left to individual teachers to resolve. In developing their systemic response, it is critical that schools identify a variety of interventions so that they can be matched to the individual needs of students.

Finally there needs to be a system in place that ensures that interventions are monitored and evaluated regularly to see that they are working to the student’s benefit. In a webinar titled “Beware the Seductive Shortcuts on the PLC Journey,” the authors reiterated the importance of assessing effectiveness based on results rather than intentions. They further explained that schools, teams, and individual teachers must use relevant data to promote continuous improvement (Dufour, R., Dufour, R. , October 15, 2012). The teachers often talked about the interventions they developed for the advisory period, but monitoring or evaluating interventions was never mentioned. The fourth critical question focuses on “what will the school do when they already know it?” This enrichment aspect also needs to be reviewed to identify what pre-assessment strategies are in place to identify what students already know and what still needs to be learned. CMS needs to evaluate what advanced instruction and materials are provided for students who are exceeding the curriculum standards.

The four critical questions of PLCs can help drive the focus and direction of PLCs at CMS. The work of sustaining effective PLCs will require all stakeholders to be part of

the PLC process. Overall, there are a few additional steps that need to be taken to maintain and grow effective PLC's, which are discussed in the next section.

Through the research study and my own experiences as part of the leadership team, I had the opportunity to look at the implementation process used at CMS. At this point, the school needs additional support from central administration for the purpose of funding professional development. The school would benefit from providing additional teams of teachers with an opportunity to attend PLC Academy training. If this was not possible, the school would benefit from a follow up training session for the PLC Academy that would provide the team with the best skills and strategies to assess the effectiveness of PLCs throughout CMS, not just focusing on one grade level as I did for the research study. Their professional development on PLCs will help teachers understand and remember the vision of what PLCs are and what purpose they serve. The school must revisit the overarching idea about what PLCs look like so that it can be shared and replicated across the grade levels. This vision will be critical to making a whole school cultural shift towards developing effective PLC's in each house, department, grade level, and as a whole school. These are critical factors the administrative team must put into place to continue developing more effective PLC's. For this to occur, school leaders need to align the professional development experiences to the school vision and also the students' learning needs. Prior to providing professional development, the leadership team should work with the teachers in creating a plan that identifies what the teachers need to learn to improve student achievement. Finally, school leadership teams must then provide time for the teachers to discuss the

information learned to create action research plans around the effectiveness of teaching to meet students' learning needs and to identify underperforming students.

A critical piece will be monitoring team protocols for PLC meetings and observing team time to monitor engagement around student achievement data. Leadership teams must support the teachers in initially developing a plan of action, and then reviewing research, collecting data, testing new approaches, studying results and making decisions about future actions. By being a regular part of their team meetings, the school leaders can help guide and support the teachers through this cyclical process.

Finally, CMS would benefit from networking with other schools that are implementing PLCs. Learning communities and effective leaders can learn from other schools that are willing to share their ideas and tools for improving student learning. By studying and networking with schools with comparable demographics, educators in both settings can focus on learning specific practiced and strategies that have a positive impact on student and teacher learning. The goal of the leadership team and teacher leaders will then be to move from knowing what works to doing what works in their schools.

Limitations

This research study focused on one middle school to offer practical information for the administration and teachers at CMS, while also providing practitioner research for schools who may be on their own PLC journey. Other practitioners should take into account the contextual information provided when using this research study to further develop their own PLCs.

There are clear strengths and weaknesses to this study that must be identified as they impact the value of the research. The strengths include having an insider perspective since I already knew the building culture and already built a positive rapport with the teachers and administrative team. In addition, I clearly understood the school day structure and schedule and how it provided the collaborative time key to PLCs. For CMS, this study provided them with information that will benefit the school with specific feedback for one grade level and also recommendations for moving forward. On the other hand, there are definite weaknesses to completing a study in one school, working with one specific grade level, and doing research in a setting in which I worked. In any future study, in order to get the whole picture, it would be helpful to collect survey data from the entire staff and utilize interviews and observations with the house teachers, encore teachers, and the special education teachers who work across teams. The eighth grade teachers may not be representative of the whole school or all middle schools in the school district, but for the purpose of this study, they provided a valuable picture of PLCs at CMS. In addition to surveying the whole faculty, the school would benefit from analyzing student achievement and success through the middle school years during the years of initiating and implementing PLCs. This information provides the school with more details as to the change in effectiveness of the PLCs over time. For CMS, the question the leadership team needs to focus on is how do they ensure and sustain a clear vision of what PLCs are and what purpose they serve in order to provide clarity and direction for the faculty as a whole.

It is also critical to review my own role as both a member of the past leadership team and also as the researcher. My initial concerns in doing this type of research was

that the teachers might not feel comfortable expressing negative opinions or concerns or that they may try to tailor their responses to what they thought I would want to hear. In an effort to minimize this, I tried to provide clear descriptions of the background, the processed used and studied, and the outcomes based on the data from the interviews, surveys, and observations. Through this process, multiple data points were used to answer the research questions. In addition, the data and interpretations were shared with the study participants for input, corrections, and interpretations. They were given copies of their transcriptions and draft chapters to provide suggestions if they felt their words were misunderstood. Finally, using rich description, my goal was to provide a vivid picture to the reader that would help clarify the perceptions and actions of the teachers and the administrative team so that the reader felt as if they were part of the process.

Implications for Future Research

As practitioners and researchers, we read and synthesize information and formulate new questions in the process. Through this study, additional questions came to mind that may be worth exploring more deeply. The role of leadership was clearly identified as critical to implementing PLCs. School leaders should consider what specific leadership skills are needed to provide appropriate support for teachers as they collaborate to improve student achievement. In addition to specific skills, school leaders also need to identify how to better manage the tension between direction and autonomy and open, meaningful communication? Finally, does the leadership role change as schools move through the various stages of PLCs, moving from initiation to sustenance? In looking beyond leadership, what role can PLCs play in shifting agendas such as making schools more responsive to teaching 21st century skills? Finally, a personal

question as a practitioner that has worked at the middle and elementary school level; what are the most effective ways to support PLC work in different contexts with varying amounts of collaborative time designated in the schedule? These questions will continue to encourage schools to identify the role of leadership in developing and maintaining meaningful PLCs.

At the start of this study, my hope was to understand what changes took place at CMS in terms of instructional practice and assessment after implementing the Dufour-Eaker Model of PLCs to provide feedback to the school, that I once worked in as a teacher and administrator. I also hoped to build the research base on what contextual factors contributed to PLCs especially since the research around PLCs cautioned practitioners of the difference in just calling a group of teachers a PLC and teachers actually functioning as an effective PLC. The findings from this study should be used as formative feedback for CMS and should not be used as indicating solutions or quick fixes to concerns the school may have. However, I do believe the findings provide the school with significant information on how to take a significant step forward in sustaining PLCs and hopefully being valuable research informing others in the practice of implementing PLCs.

Appendix A
Teacher Interview Guide

1. In a lesson that you taught recently, what changes have you seen based on PLCs?
   (Probe for pacing, flexibility of classroom, resources/materials used, meeting the individual needs of the students)

2. How do you think the implementation of PLCs have affected teaching practice?
   (Probe for shared leadership, congeniality versus collegiality, sharing resources and/or instructional practices, use of collaborative time)

3. If I had been at your last PLC meeting, what would I have seen you doing? (probe for agenda, topics discussed, informal/formal meetings)

4. How has your process with assessment changed over the last 4 years? (Probe for formative & summative assessments, NJASK data)

5. How has the classroom arrangement changed over the last 4 years? (Probe for changes based on specific lesson planning, centers, rows versus groups, team teaching based on lessons)

6. What is your opinion of the professional development opportunities available to you?

7. How has the curriculum mapping changed since implementing PLCs? How have your lessons/unit plans changed?
   a. How has the content that you teach in 8^{th} grade changed over the last 4 years? What happened that promoted that type of change?

8. How are instructional goals for the schools and departments developed?
   a. Are goals reviewed mid-year and at the end of the year to see if they were accomplished?

9. What roles does the leadership plan when you meet with them during PLC time?
   a. Describe the time you are given to work collaboratively

10. How could CMS continue to sustain and enhance the PLCs that already exist?

Appendix B
Administrator Interview Guide

1. How have you seen the instructional practices change since implementing PLCs?

2. How has the curriculum mapping changed since implementing PLCs? How have lessons/unit plans changed within the building?

3. How are teachers using data?(Probe for formative and summative assessments, NJASK, driving instruction)

4. In what ways do administrators use data for the school as a whole?

5. How have the goals changed over the last three years since implementing PLCs? How are goals developed for the upcoming school year? Who is involved in the process?

6. How do you encourage teacher leadership?

7. How do you encourage relationships built on trust?

8. In what ways are you able to provide additional time for teachers to collaborate?

9. How do you provide job-embedded professional development for the faculty?

10. How could CMS continue to sustain and enhance the PLCs that already exist?

Appendix C

Teacher Survey

1. Please mark an "X" in the descriptor that best describes how much your practice changed in each of the areas listed below since implementing PLCs in 2007:

	Not at all	Very Little	Somewhat A Great Deal
a. Student grouping	_____	_____	_____
b. Materials used	_____	_____	_____
c. Topics covered	_____	_____	_____
d. Teaching methods used	_____	_____	_____
e. Kinds of work students do	_____	_____	_____
f. Kinds of questions asked	_____	_____	_____
g. Understanding of the individual students in their class	_____	_____	_____

2. Please mark an "X" in the descriptor that best describes how much your practice changed in each of the areas listed below since implementing PLCs in 2007:

	Not at all	Very Little	Somewhat A Great Deal
a. Use of common formative assessments	_____	_____	_____
b. Use of common summative assessments	_____	_____	_____
c. Use of NJASK to drive instruction	_____	_____	_____
d. Other use of data _____	_____	_____	_____

3. Please mark an "X" in the descriptor that best describes your beliefs on the following occurring at CMS since implementing PLCs in 2007:

	Not at all	Very Little	Somewhat A Great Deal
a. Collegial support	_____	_____	_____
b. Positive morale	_____	_____	_____
c. Collective responsibility			

for students _____ _____ _____
_____

d. Reflective conversation _____ _____ _____
_____

4. Please mark an "X" next to any/all of the types of PD you participated in during the 2010-2011 academic year. Please specify course or workshop names for each type you mark an "X" for:
   a. Graduate courses _____
      _____
   b. Out of district workshops _____
      _____
   c. In district workshops _____
      _____
   d. In school opportunities _____
      _____
   e. Peer Observation _____
      _____
   f. Other: _____
      _____

5. In addition to teaching, please mark an "X" next to any other roles you had in the building for the 2010-2011 academic year. Please provide specific details regarding your positions.
   a. Coaching _____
      _____
   b. Club Advisor _____
      _____
   c. Committee Chair/Member _____
      _____
   d. Supervising/Attending events _____
      _____
   e. Other _____
      _____
      _____
      _____

6. Using the list provided below, please circle the names of 4-6 colleagues you discuss pedagogy and assessment with throughout the year.

NAME	NAME	NAME
ACQUESTA	GRENIER	OCONNELL
ALVAREZ, L.	GRAYSON	ONYX
ALVAREZ, R.	HANNA	PHELAN
AMOROSO	HARE	PIERLOTT
ANASTASIA	HENES	PITZORELLA

ANTONELLI	IBANEZ	PUGLIESE
AUGUSTYN	KAIN	RADITZ
BACANI	KANTNER	REIDENBAKER
BARCLAY	KAPLAN	REYNOLDS
BARRETT	KATZ	ROBERTSON
BASTNAGEL	KELLY	SANDERS
BLUMENSTEIN	KIMLER	SANTUCCI
BONNET	KORFF	SCHOEN
BOXLEY	KRUPA	SCHUHL
BRADSHAW	LAMB	SCIBILIA
BROCCO	LIGAS	SEMAR
BROWN	LIPKOWITZ	SHIMA
BUDNIAK	LITHGO	SLOANE
CALLAHAN	LOUIE	STRASLE
CARREL	MARCHIO	TAYLOR
CONNELLY	MARKS	TEDESCO
D'ALESSANDRO	MARTINO	TIRADO
D'AMORE	MC CALL	TOMASETTI
DEFFNER	MEAD	TURGEON
DELGADO	MEDER	TUROFF
DILLON	MILLER	VAN NAME
DOLAN	MINIO	VESCI
EKSTEROWICZ	MORRIS	WARD
FRIEDBERG	MUSUMECI	WARRINGTON
FROCKOWIAK	NECE	WISNIEWSKI
GIORDANO	NEGRIN	WORRELL
	NICOLAIS	

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