University of Northern Iowa

UNI ScholarWorks

2017

First year professional learning community implementation within the Marion High School Science Department

Madilyn M. Ramaekers
University of Northern Iowa

Let us know how access to this document benefits you

First year professional learning community implementation within the Marion High School Science Department

Abstract

The underlying theory of this research study is a radical constructivist worldview. Radical constructivism is based on two main ideas, that knowledge is not passively received but instead is actively built by individual people and that the function of cognition is adaptive and works to organize the experiential world (Von Glasersfeld, 1989). It is assumed that as teachers partake in a professional learning community they seek understanding of their school and classroom. Findings of the research will not be narrow but rather varied and multiple, leading to a range of views rather than a singular view. In radical constructivism, experience is subjective, so each participant will work to make sense perceptions filtered through their individual biases. The goal of the research is to determine how the science department makes sense of PLCs and a case study research approach will be used with this constructivist worldview. Case study research aims to understand a particular phenomenon, the implementation of a science Professional Learning Community at Marion High School in this case, by selecting that phenomenon as the focus of the study. Outcomes of the research will be an in-depth analysis of the first year of PLC implementation within the science department. This study will be openly shared with any interested teacher or administrator. This would allow teachers involved in the science department PLC and administrators who oversee the PLC time to reflect and make any necessary adjustments going in to the second year of implementation. Administrators have their own way to determine how the first year of PLCs go, but this would allow for one more piece of qualitative data. On a broader scale, it might provide similar sized districts or departments an idea of what to expect when they begin the same PLC journey.

First Year Professional Learning Community Implementation

within the Marion High School Science Department

Madilyn M. Ramaekers

University of Northern Iowa

Chapter 1 Introduction and Framework

Professional development, the practice of maintaining professional credentials through facilitated learning, is widely relied upon by educational institutions to keep teachers current in pedagogy and ensure academic standards are met. Facilitated learning is seen as a way to improve teaching and keep educators up on current best practices. Professional development is viewed as vital to school success, but is also highly criticized for a lack of results (Editorial Projects in Education Research Center, 2011). One area of professional development that has gained positive recognition in the recent past for making progress toward student results is the development of Professional Learning Communities (PLCs) for educators (DuFour, DuFour, Eaker, Many, & Mattos, 2016, p. 9).

A professional learning community is defined as a group of educators who engage in an ongoing process in which they work collaboratively in recurring cycles of collective inquiry and action research to achieve better results from the students they serve (DuFour et. al., 2016, p. 10). Professional Learning Communities are driven by three main ideas: a focus on learning, a collaborative culture of collective responsibility, and a results orientation. While one could expect a focus on learning to be constant, the PLC process shifts the focus from teaching to learning. Dufour (2016) sees the Professional Learning Communities as a shift in fundamental purpose from covering content to ensuring students can demonstrate proficiency. It is no longer sufficient for students to be given an opportunity to learn, instead educators need to ensure all students learn. This shift is driven by the desire to eliminate the Knowing-Doing gap. Pfeffer and Sutton (2000) explained that there has been a continuous disconnect between knowledge of best

practice and action in a school and something like a PLC makes sense in trying to put that work into action. The collaborative culture of collective responsibility requires that all teachers work together to guarantee success for all students. The collective responsibility idea necessitates a PLC must work interdependently to achieve their goals. A results orientation keeps the focus on the work that will move student learning forward in a search for constant improvement.

Professional learning communities are needed now more than ever as schools work to break away from traditional ways of doing things in order to become more effective. Some of these traditional elements of teaching include infrequent summative assessments, each teacher independently determining the criteria to use in assessing student work, a fixed time and support for learning, and teachers working in isolation. This shift will go more toward frequent formative assessments, to collaborative teams clarifying the criteria and ensuring consistency among team members, to time and support for learning as variables, and continual collaboration. Many educators feel that people work better in teams, and PLCs give teachers a chance to put teamwork into action. DuFour believes the best way for students to learn is through doing (2016, p. 55), so it stands to reason that like students teachers can also learn best through doing and using the same collaborative efforts they encourage in the classroom. Professional Learning Communities take the action of doing by defining their purpose and working as a team to live out that purpose. Defining purpose fits well as K-12 science education in the state of Iowa shifts to the Next Generation Science Standards (NGSS).

The NGSS identify scientific and engineering practices, crosscutting concepts, and core ideas in science that all K-12 students should master in order to prepare for life

after school (Bybee, 2013). In the classroom, the NGSS will be implemented with

educational practices students are thought to learn best in - a hands-on, collaborative, and

integrated environment through use of discovery. If students are to think on their own,

problem solve, communicate, and collaborate it is imperative that teachers work to do the

same.

The 2016-2017 school year marked the first year of the Marion Independent

School District partaking in Professional Learning Communities. The district employees

attended a three-day PLC training seminar supplemented with professional development

time as the school year began. This creative component will focus on the science

department which consists of five teachers at the high school level. The research will

track how the understanding, implementation, and impacts of the PLC evolves

throughout the first year of implementation. The research will be conducted in a series of

three interviews of each individual teacher at the following times: the start of the 2016-

2017 school year, midway through the school year, and after the school year has finished.

The underlying theory of this research study is a radical constructivist worldview.

Radical constructivism is based on two main ideas, that knowledge is not passively

received but instead is actively built by individual people and that the function of

cognition is adaptive and works to organize the experiential world (Von Glasersfeld,

1989). It is assumed that as teachers partake in a professional learning community they

seek understanding of their school and classroom. Findings of the research will not be

narrow but rather varied and multiple, leading to a range of views rather than a singular

view. In radical constructivism, experience is subjective, so each participant will work to

make sense perceptions filtered through their individual biases. The goal of the research

is to determine how the science department makes sense of PLCs and a case study

research approach will be used with this constructivist worldview. Case study research

aims to understand a particular phenomenon, the implementation of a science

Professional Learning Community at Marion High School in this case, by selecting that

phenomenon as the focus of the study. Outcomes of the research will be an in-depth

analysis of the first year of PLC implementation within the science department. This

study will be openly shared with any interested teacher or administrator. This would

allow teachers involved in the science department PLC and administrators who oversee

the PLC time to reflect and make any necessary adjustments going in to the second year

of implementation. Administrators have their own way to determine how the first year of

PLCs go, but this would allow for one more piece of qualitative data. On a broader scale,

it might provide similar sized districts or departments an idea of what to expect when

they begin the same PLC journey.

Chapter 2 Relevance and Literature Review

The Need for Professional Learning Communities

Professional learning communities are needed now more than ever because the consequences of not achieving a high school education are devastating. For students and teachers both, learning by purposeful doing counts most and is the driving factor behind PLCs leading to higher graduation rates (Fullan & Quinn, 2016, p.21). Those who have not learned how to learn will be left behind. The Center on Education and the Workforce (2010) predicts that by 2018, 90% of workers without a high school education will be limited to working in either food and personal services, sales and office supports, or low tech blue collar jobs, all of which pay low wages or are in decline. By the same year, the country will need 22 million new workers with college degrees but are expected to fall short of that number by at least 3 million. The Center also makes the point that in the past, the term illiterates described those who could not read and that definition has shifted to include those who have not learned how to learn and continue their learning beyond the K-12 education system. Thirty four percent of students who enter college drop out within the first year and only 36% who enter a four-year public college earn a bachelor's degree within five years (ACT Retention/Completion Summary, 2012). All of these alarming statistics could be improved through more students getting a better and stronger high school education. High school education can be aided through the use of PLCs and might help to fill the gap for students who continue on to college without the ability to learn new ideas and information at the fast-paced college level. PLCs are indicative of a trend toward professional development that focuses on collaboration, data, peer-facilitation, all the while focusing on classroom practice (Barber & Mourshed, 2009).

Schmoker (2005) agrees saying that PLCs are the best, least expensive, and most professionally rewarding way to improve high school education.

Essentials of a Professional Learning Community

Professional learning communities begin with careful definition of a school's purpose and mission. Without a clear mission, a school has no hope of creating a change in structure (Newmann & Wehlage, 1996). Research examining successful schools reveals that they share characteristics of high-performance workplaces that foster cultures built on teamwork and shared mission (Anrig, 2013). A mission statement at the school level empowers educators to support each other's efforts and fully engage their talents (Halvorson, 2014). This clear purpose will help guide implementation and will serve as a foundation of the PLC.

Collaboration. When teachers work together they become better teachers (Many & Sparks-Many, 2015). This happens in two ways; first, teachers can share specific instructional strategies to improve teaching and second, they can deepen their content knowledge. Eastwood and Louis (1992) argue that the single most important factor for successful school improvement is to build a collaborative internal environment. This alone will help restructure the schools and increase their capacity to educate. Through collaboration in a strong professional learning community, the quality of student learning can be improved by the promotion of discussions grounded in evidence and analysis rather than opinion (McLaughlin & Talbert, 2006). This PLC can foster collective responsibility for student success through teamwork.

A team is defined as a group that works interdependently to achieve a common goal for which all members are mutually accountable (DuFour et. al., 2016, p. 60). The

PLC formation creates a team who agrees to be mutually accountable for all students learning. Teams are such a powerful force of productivity that they form the basic building block of any intelligent organization (Pinchot & Pinchot, 1993).

The purpose of educator collaboration is to help more students achieve at higher levels, but this can only be accomplished if professionals are engaged in collaboration that is focused on the right work (DuFour et al., 2016, p. 59). The four questions of any PLC are:

- What do we want students to know?

- How will we know they have learned?

- How will we respond if they don't learn?

- How will we extend learning for those that do learn?

These four essential questions help keep the team focused on student learning and critical pieces such as curriculum, assessment, and instruction. The other common factors of professional learning communities are collective commitments and the use of norms, SMART goals, formative assessments, and systematic interventions. Collective commitments clarify what each member of the PLC will do to create an organization that ensures all students learn. Norms are defined as the ground rules or habits that govern the group and how the group interacts. A formative assessment is an assessment for learning, one in which educators help students to understand the target they are trying to reach, where they are now with respect to the target, and how to close the gap between the two. Systematic intervention at the high school level requires that schools create a process to identify students who need interventions or extensions and then ensure that they receive the additional help in a timely matter. Putting all of these into place shapes the PLC and

ensures that students have access to a guaranteed and viable curriculum. A guaranteed

curriculum means that all students have access to the same content, knowledge, and skills

across a school; even if the instruction varies between classes the essential learnings do

not.

        Collective commitments. Collective commitments are one of the foundational

pillars of a PLC, and define the values of the professionals within the PLC. These values

address the question of how members of the PLC must behave to achieve the shared

vision and could include such things as creating a welcome and safe environment, being

responsible for the success of every student, and modeling respect and integrity. The

collective commitments keep the team focused on how they must behave in order to

achieve their purpose (DuFour et al., 2016). This guide can help both the individual and

the collaborative work and create a sense of positive peer pressure. The values represent

the commitments to action to make sure the vision is realized and in the best PLC

cultures, vision and values become the driving force behind any decision-making

(Kanold, 2011, p. 13). If values are made an integral part of a shared vision, they become

a guiding symbol of behavior that will help move people forward toward the vision

(Senge, Ross, Smith, Roberts, & Kleiner, 1994, p. 302). The biggest key to having

collective commitments really steer the PLC in a positive way is to make sure that people

operate by them, reinforce them every day, and not tolerate behavior that violates the

commitments (Bryant, 2014). In professional learning communities, these collective

commitments shift the leadership from being the boss of the team to being the protector

of the commitments created and maintained by the group. This makes PLCs different

from professional development initiatives of the past at Marion High School. Previously,

a professional development committee initiated and conducted the professional development. The committee dictated ideas to the departments rather than them working together to determine agendas.

Norms. Merely putting teachers in groups is not enough to ensure school improvement, it is essential that the teachers are focused on the right work (DuFour et al., 2016, p. 67). One way to help ensure teachers focus on the right work is to establish norms, ground rules or habits that will govern the group. When individuals work through a process to create norms, they increase their ability to work as a collaborative team rather than just as a loose collection of people working together (DuFour et al., 2016, pg. 72). Establishing norms is one of the early steps after a PLC has been established. When done well, these norms can establish a trust, openness, and accountability that will move teams forward. Lencioni (2005) found that norms can help clarify expectations, promote open dialogue, and serve as a powerful tool for holding members accountable. Explicit team norms help increase the emotional intelligence of the group by creating trust, a sense of identity, and an overall belief in the group (Katzenbach & Smith, 1993, p. 60). Inattention to establishing team norms is one of the major reasons that teams fail (Blanchard, 2007). While it is possible to form a PLC without norms, the ability of the group to function as a cohesive unit is then threatened. The establishment of norms will keep teachers focused on the right work.

Goal-setting. Another facet of a PLC is the use of SMART goals. The SMART goal acronym (Conzemius & O'Neill, 2013) stands for goals that are strategic, measureable, attainable, results oriented, and time bound. Strategic means that they are aligned with the organization's goals and time bound means it is specified when the goal

will be achieved. SMART goals keep the focus on student learning rather than teaching and really focuses on results rather than instructional activities. Goal setting is the most powerful motivational tool in a leader's toolkit because it provides purpose, challenge, and meaning (Blanchard, 2007, p. 15). Although goal setting is a simple intervention, it is an effective way to increase employee performance (O'Hora & Maglieri, 2006, p. 132). Professional development in schools is unlikely to have any effect if it is not connected to a coherent set of goals that gives direction and meaning to learning (Elmore, 2003, p. 60). Schools that have the greatest impact on student learning establish clear and measureable goals focused on improving student achievement at the school level (Marzano, Warrick, & Simms, 2014, p. 57). SMART goals help the PLC focus on their desired outcomes.

  Assessment. To keep the team progressing toward meeting their SMART goal, PLCs use common formative assessments. A common formative assessment (CFA) means that students who are in the same curriculum and are expected to acquire the same knowledge, skills, and dispositions will be assessed using the same instrument or process, at the same time (DuFour et al., 2016, p. 134). Formative assessments are used to drive the PLC discussion and make it data driven rather than qualitative in nature. This does require the educators to keep diligent data on their administered CFAs. DuFour (2016) believes that common formative assessments are one of the most powerful strategies for improving student leaning available. Frequent and high quality CFAs help the teachers work collaboratively to help a group of students acquire the agreed upon knowledge and skills. There is a strong evidence that improving formative assessments can raise standards of student performance (Black & William, 1998, p. 20). There have been few other education initiatives with such a strong body of evidence to support a claim to

improve achievement. Effective use of formative assessment, developed through teacher

communities, promises the largest potential gain in student achievement and is also

affordable professional development (William & Thompson, 2007). The major purpose

of assessment in schools is to provide information to teachers about their impact on

students and this feedback has the ability to be powerful. This powerful tool can be

maximized when the assessment is timely, informative, and related to what teachers are

actually teaching (Hattie, 2015). Common formative assessments give PLCs the evidence

they need to make decisions.

Interventions. The team is just one part of the PLC. Systematic interventions are

a larger scale that the PLC team fits into. It is essential that all students are given an equal

opportunity to learn independent of what teacher they are randomly assigned. The goal is

not that the students receive identical instruction but that the instruction address the same

essential learning targets. A system of interventions is put in place to address four

essential outcomes; all students must have access to grade-level curriculum as part of

their core instruction, some students will require additional time to master that

curriculum, some students will enter the year lacking on previous grade-level curriculum,

and some students fall in to all three categories (DuFour et al., 2016, p. 167). Systematic

interventions are the schools' guarantee that each student can receive the help they need.

High-performing schools have put in place high expectations for all students, and they

use assessment data to support student success, employing systems for intervention as

needed (Ragland, Clubine, Constable, & Smith, 2002). High-performing schools were

also found to identify struggling students early, direct them toward intervention strategies

and help them master grade-level academic objectives (National Center for Educational

Achievement, 2009, p. 34). A criterion for schools that have made strides in student

achievement is their decisive intervention, the fact that they do not give a second thought

to providing preventative assistance for students in need before they fall behind their

peers (Reeves, 2006, p. 87). Systematic support takes facilitation by the entire school

including educators, administration, and support staff. It is not just students who benefit

from systematic support, it also helps support the educators in the classroom as they help

students succeed (DuFour et al., 2016, p. 165). Teachers cannot do it alone, and the

support system that can be built with systematic interventions will help ensure that

students receive the additional time and support they need for learning.

Ensuring the curriculum. Students have access to a guaranteed and viable

curriculum through the use of collective commitments, norms, common formative

assessments, SMART goals, and systematic interventions. A guaranteed curriculum

means that all students have access to the same content, knowledge, and skills across an

entire school district, even if the instruction varies the essential learning goals do not. In a

guaranteed curriculum, the same standards are met within the same course. A viable

curriculum is one that is realistic in its scope and is developmentally appropriate for the

students (DuFour et al., 2016, p. 122). The only way the curriculum in a school can be

guaranteed is if the teachers work collaboratively to study the intended curriculum, agree

on curriculum priorities, establish pacing guidelines, and commit to one another that they

will teach the agreed-upon curriculum (DuFour & Marzano, 2011, p. 91). If we wish to

really shift educational practice then all affected groups of educators need to develop

clarity of outcomes and build shared understanding of these by educators, students, and

parents (Fullan & Quinn, 2016, p. 83). A key to improving schools is to ensure that

teachers know the learning intentions, know how well they are attaining these criteria, and know where to go next if there is a gap in learning; this can be improved in a safe environment in which teachers talk to other teachers about their teaching (Hattie, 2009, p. 239). When developing a guaranteed and viable curriculum, teachers are continually refining and clarifying their understanding of what students should know and be able to do. This deepened understanding should help the teachers as they return to their classrooms to implement.

Research Question

The question being researched through this project is how Marion High School's science department perceptions of Professional Learning Communities evolve throughout the first school year of implementation. This question came about because the district took on a huge undertaking when we decided to operate under a PLC system. This decision came down from administration rather than originating from teachers. The shift in education, and teachers' approach to education, is one that will take a commitment of time, energy, and resources. To evaluate the PLC going forward, it will be important that administration and teachers agree on where we currently are and where we are going. This research will report on where the science department is after year one, how the school year shaped our understanding and implementation of the PLC, and in what areas we were successful or where we need to continue to improve going forward.

Chapter 3 Project

The science Professional Learning Community at Marion High School includes all five teachers. We received three days of whole district training in the summer of 2016, a few additional days of professional development devoted to PLCS to begin the 2016-2017 school year, and were then asked to implement a professional learning community approach through the 2016-2017 school year. Of the five teachers, two took on the role of being co-learning team facilitators (LTFs) who were the liaisons between the PLC and the administration at the high school. The science PLC met twice a week, for 30 minutes at a time, during the school day while we had common planning time.

Training

The three-day training that included the whole district took place in June of 2016. Solution Tree set up a Hybrid PLC Institute to introduce the district to Professional Learning Communities. Solution Tree is a company that delivers professional development to schools and districts across the world (more information can be found at https://www.solutiontree.com/). The hybrid format meant that we had a Solution Tree facilitator on site and his presentations were supplemented with video recordings of other Solution Tree speakers from various conferences. Each district employee received the book *Learning by Doing: A Handbook for Professional Learning Communities at Work* and an agenda for the three-day training that included PowerPoint slides and worksheet handouts.

Day one included presentations that covered a wide range of PLC topics. The first presentation began with things needed to build the solid foundation of a Professional Learning Community at work. The content discussed here included the never-ending

journey of a PLC and the need to establish a solid foundation to sustain any subsequent efforts. Next, the presentation on the work of teams in a collaborative culture. This presentation reviewed a five-step process to select priority standards. Priority standards are those standards that educators ensure students have mastered before completing their class. It also emphasized writing priority standards to provide students a clear understanding of the expected learner outcomes. After that, we learned about building a collaborative culture of a professional learning community at work. This focused on how collaborative teams are the building block of a PLC and a critical component in building the culture needed to sustain a PLC. The afternoon built on the morning with a focus of working in a collaborative culture and practice writing priority standards.

Day two began with praise for American educators and a charge for how they can become even better. The facilitators presented research on how current educators are doing great things, maybe the best in history, but we can and need to do even better because the consequences for students not succeeding is as devastating as it has ever been (DuFour, 2015). Following that, the presenters reviewed a process to take a priority standard and break it down further into learning targets and how to match those learning targets to proper assessments. The high school and elementary teachers split in order to increase our focus. The high school received information during a segment on raising the bar and closing the gap. The session challenged educators to examine issues from a student perspective in order to discover the value of building a collaborative culture as well as creating structures to provide students additional time and support. The second day wrapped up with a session on best PLC practices in action. Educators collaborated with each other in this session in order to consider best practices of their PLC team, to

clarify how data could impact and inform best practices, and to discuss the structures that can help guide their team as they answer the four critical questions of all PLCs.

Day three involved each PLC meeting on their own. The high school science PLC discussed the learnings from day one and day two including PLC structure, philosophy, and vision. As a team, we reviewed our norms and set a tentative calendar for the 2016-2017 school year. The day concluded with a discussion of the vision moving forward.

School Year

As determined during the PLC hybrid institute, the high school science PLC met for 30 minutes twice a week during our common prep time within the school day. Common prep period meant we all had the same block off of teaching duties. This block rotated throughout the year so we didn't meet at the same time every quarter but we did keep the same set-up. Meetings took place in one of the science teacher's rooms.

Participants

The five participants of this research included myself, Paul Yang, Chris King, Tammy Yood, and Debra East (participating teachers were assigned pseudonyms). I have been teaching for 5.5 years all at Marion High School and have taught Chemistry, AP Chemistry, Physics, and General Science Motion. Paul Yang has taught for a total of 34 years with 19 of those years at Marion, and has taught all of the science classes except for Chemistry and Physics. Chris King has taught for 36 years entirely at Marion. He has taught General Science Matter, General Science Motion, and all of the Biology classes. Tammy Yood has been teaching at Marion for 10 years and subbed before that. She has taught General Science Matter, General Science Motion, Earth and Space Science, and

Astronomy. Debra East has been teaching for 20 years and had previously taught math but now mostly teaches General Science Motion and General Science Matter.

Interviews

Two different types of interviews were conducted throughout this research, face-to-face interviews as well as an electronic questionnaire about PLC team considerations.

Electronic Questionnaire. Each teacher received the electronic questionnaire twice, at the beginning of the 2016-2017 school year and at the conclusion of the school year. The questionnaire came through e-mail and contained the following directions: For the following statements respond with a number of 1-10. A score of 1 means it is not true of our team, a 5 means our team is addressing it, and a 10 means it is true of our team. The rest of the numbers between 1-10 fall on a continuum.

1. We have identified team norms and protocols to guide us in working together.

2. We have analyzed student achievement data and have established SMART goals that we are working interdependently to achieve.

3. Each member of our team is clear on the essential learnings of our course in general as well as the essential learnings of each unit.

4. We have aligned the essential learnings with state and district standards and the high-stakes exams required of our students.

5. We have identified course content and/or topics that can be eliminated so we can devote more time to essential curriculum

6. We have agreed on how to best sequence the content of the course and have established pacing guides to help students achieve the intended essential learnings.

7. We have identified the prerequisite knowledge and skills students need in order to master the essential learnings of our course and each unit of the course.

8. We have identified strategies and created instruments to assess whether students have the prerequisite knowledge and skills.

9. We have developed strategies and systems to assist students in acquiring prerequisite knowledge and skills when they are lacking in those areas.

10. We have developed frequent common formative assessments that help us to determine each student's mastery of essential learnings.

11. We have established the proficiency standard we want each student to achieve on each skill and concept examined with our common assessments.

12. We have developed common summative assessments that help us assess the strengths and weaknesses of our program.

13. We have established the proficiency standard we want each student to achieve on each skill and concept examined with our summative assessments.

14. We have agreed on the criteria we will use in judging the quality of student work related to the essential learnings of our course, and we practice applying those criteria to ensure consistency.

15. We have taught students the criteria we will use in judging the quality of their work and have provided them with examples.

16. We evaluate our adherence to and the effectiveness of our team norms at least twice each year.

17. We use the results of our common assessments to assist each other in building on strengths and addressing weaknesses as part of a process of continuous improvement designed to help students achieve at higher levels.

18. We use the results of our common assessments to identify students who need additional time and support to master essential learnings, and we work within the systems and processes of the school to ensure they receive that support.

As the conductor of this research and a member of the science department, I responded to these statements with my beliefs before presenting them electronically to the other teachers.

Face-to-face Interviews. The face-to-face interviews were conducted separately with the researcher and each of the participants. The interviews happened at three times throughout the school year, with each participant being interviewed each time. Interview 1 was conducted at the beginning of the 2016-2017 school year, in August of 2016. It included the following questions:

1. How long have you been a teacher and specifically how long have you been a teacher at Marion?

2. What subjects are you currently teaching and what you have taught in the past?

3. In your own words, how would you define a Professional Learning Community (PLC)?

4. In what ways do you think PLCs are similar and different from educational initiatives of the past?

5. How will we know if our PLC is productive?

6. What do you see as the biggest obstacle to PLC implementation?

7. What reservations, if any, do you have about forming professional learning communities?

8. What do you envision to be the biggest impact of the PLC in terms of your teaching and student learning?

9. Is there any specific area of instruction you would like to see improved through your PLC work?

10. What do you think are the biggest possible impacts of PLC implementation for our department, our school, and our district?

11. What steps do you see us taking through this first year of PLC implementation?

Interview 2 was conducted in January of 2017 about halfway through the school year and included the following questions:

1. If your own words, how would you define a Professional Learning Community?

2. How do you think your understanding of the PLC has changed?

3. How would you describe the steps we have gone through with our PLC so far this year, and where do you see us going through the rest of the school year?

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?

5. In what ways has the professional learning community been what you expected and in what was has it differed from your expectations?

6. To this point so far, do you think the PLC has had any impact on your teaching?

7. In your opinion, is this PLC something that our school can sustain and maintain?

8. Knowing what we know now, what would you want to have seen done differently to start the year?

9. In addition to our first year of PLC implementation, as a district we are also

    seeing our first year of implementation of the TLC grant and the changing of the

    Iowa Core Science to include the Next Generation Science Standards (NGSS).

    a. Do you think these three things complement each other?

10. Has the PLC helped with your understanding of the NGSS?

11. Do you think the district has supported us in our PLC formation?

12. What recommendations would you make to a school district that was thinking

    about starting to from PLCs?

Interview 3 was then done at the end of the 2016-2017 school year late in May 2017 and

included the following questions:

1. If your own words, how would you define a Professional Learning Community?

2. How do you think your understanding of the PLC has changed throughout this

    year?

3. How would you describe the steps we have gone through with our PLC this year,

    and where do you see us going into next school year?

4. What parts of the PLC process do you think we have succeeded in and what parts

    do you think we need to continue to work on?

5. An important part of the PLC process is communicating effectively. Looking at

    the continuum, where do you think we fall on the idea that the school has

    established a clear purpose and priorities that have been effectively

    communicated.

6. Respond to the following statements in regards to the MHS Science Department

    a. It is evident that learning for all is our core purpose

   b. We have a shared understanding of and commitment to the school we are
    attempting to create

   c. We have made commitments to each other regarding how we must behave
    in order to achieve our shared vision

   d. We have articulated our long-term priorities, short-term targets, and
    timelines for achieving those targets

7. The first question in a PLC should be, "what do we want students to learn?" How
  would you describe the process we have gone through this year to try and address
  that?

   a. Looking at the continuum in front of you, in what state do you think we
    are currently at?

8. How do you think this year with our biweekly meetings have impacted you? Your
  students?

9. How do you think your perceptions of Professional Learning Communities have
  evolved throughout this first school year of implementation?

10. Anything else you want to share about this school year in regards to our
  department time?

Each interview was conducted in the participants' room and ranged in time from 5-15
minutes depending on the participants' answers. Like with the electronic questionnaire I
'interviewed' myself with the same set of questions by typing out my responses before
conducting each set of interviews.

Results from Electronic Questionnaire

For a full list of participants' responses see Appendix A.

Discussion. With five people responding to the 18-question questionnaire, I analyzed 90 statements for pre-year and post-year changes of the PLC implementation considerations. Of those 90, 13 resulted in a decrease in rating from the beginning of the school year to the end, 13 resulted in an increase of three or more, and 64 resulted in either no change or a small positive increase.

Focusing on the areas that rated as the most positive increase the team felt they did a good job of addressing the following ideas:

1. Each member of our team is clear on the essential learning goals of our courses in general as well as the essential learning goals of each unit,

2. We have identified course content and/or topics that can be eliminated so we can devote more time to essential curriculum, and

3. We evaluate our adherence to and the effectiveness of our team norms at least twice a year.

With this being the first year of PLC within the science department, I think this positive growth is a step in the right direction. The work from this year will serve as a foundation that can be built on for years to come.

Focusing on the areas that showed the greatest decrease the team felt they needed to do a better job of addressing the following ideas:

1. We have analyzed student achievement data and have established SMART goals that we are working interdependently to achieve and

2. We have aligned the essential learnings with state and district standards and the high-stake exams required of our students.

Having only two ideas where teachers rated the PLC lower after the school year can be

viewed as an okay thing but I do think it is something that needs to be addressed for the

PLC to be able to move forward. Aligning essential learnings with state and district

standards is what we spent the majority of our PLC time working on this year, and even

with that two teachers rated a decrease over the school year and the other three had

increases of only 3 or less. This is a challenging, time consuming task and as such might

be scored harsher than some other less consuming tasks. If we are to address the first

question of the PLC, "What do we want students to learn?" we need to have an idea of

the essential learning goals for each course. Without a clear understanding of the essential

learning goals, we aren't able to create common assessments to help move our teaching

forward.

With five different teachers, it is not surprising that they scored the statements

differently on the questionnaire but Chris King consistently reported higher scores than

other team members. Having him explain his thoughts about the different statements

from both before and after the school year might help to remedy the discrepancy between

his numerical ratings and those of others.

The other alarming result of the questionnaire is that there were six considerations

where at least one teacher responded with a decrease of one or more after the completion

of the school year and at least one other teacher responded with an increase of three or

more. With this inconsistent result, I think it shows a lack of common expectations. Team

members considered the work from this year as making great strides toward the science

PLC while others thought us actually further from achieving what we want the PLC to be

after one year of implementation. No one expects perfection after implementing for only one year, but this could be a starting point for discussion to begin year two.

Face-to-Face Interview Summaries

The entirety of the transcribed interviews can be found in appendices B-F.

Madi Ramaekers. In the first interview, I defined a Professional Learning Community as a group of people who work to build up their understanding in order to improve their instruction. I thought it different from educational initiatives of the past because it didn't offer a quick fix, but instead required a whole school commitment. I commented on the fact that having built in time during the school day for our PLC meeting time made it different than professional development initiatives of the past. At the beginning of the school year I thought we would know if our PLC was productive based on the impact it has on our understanding as teachers and our students understanding of science. I anticipated the biggest impact PLCs could make were on student learning and the consistency that could come from working so closely with my colleagues. I think the PLC model helps with built in leadership as the team works interdependently to achieve. My prediction about the work we would do throughout the 2016-2017 school year included working on building common formative assessments, analyzing student data, and making data informed decisions.

In the second interview, I defined a PLC as a group of teachers who spend time learning together in order to try and improve their instruction and student learning. I said my understanding of the PLC hadn't changed in definition from the beginning of the school year, but the process has been different than I thought it would be. The time required to fully address the question, "what do we want students to learn?" has been

much longer than anticipated. I attributed this to the PLC coinciding with the change in science standards from the old Iowa Core to the NGSS. While I think the PLC and NGSS complement each other, it has just really slowed the pace because we have shifted our focus from learning for students to teachers understanding the new set of standards. I think the PLC formation has helped my understanding of NGSS though because it has allowed me time to explain what I know about it to my coworkers. I think the most successful parts of the science PLC have been setting up a collaborative and community feel to the team, but we can continue to move ourselves forward by focusing on students rather than on teachers.

Interview three had me defining a PLC as a group of teachers who engage in learning together. The biggest change in my understanding did not come from the department work this school year but instead came from research on what makes a PLC successful or unsuccessful outside of school time. Reflecting on the school year, I think we spent time working to understand what the NGSS says students should know and determining how these standards currently fit into our classes. "This fits with PLC because we need to determine what we want students to know, but it kept us from engaging in the other practices that could make a PLC successful." I think our greatest strength was team dynamic because even when I became frustrated with how things were going, it was clear that every teacher had students' best interests at heart. "Watching the science teachers engage with students it is clear that learning for all is really at the core of our purpose. You can tell by student teacher interactions we each try to do the best we can for our students." I think we can improve on articulating long-term priorities, short-term targets, and timelines to achieve those targets. I thought we had done some of this

work implicitly but it was not anything that had been solidified in writing. The biweekly meetings have had a strong impact on me and have helped me to develop better relationships with my coworkers and a better understanding of what they teach in the classroom. I think it is still too early in PLC implementation to have seen an impact on students though. Even without making much progress as the PLC is concerned, I did think that the science team was able to accomplish some things during our meetings this year that were valuable. The progress we made will help continue to move the science department forward.

Throughout the year, I remained constant in my definition of what makes a PLC. From the beginning of the year to the end I can tell I went from being very optimistic to the impact the PLC could make, to frustration in the middle of the year when things did not seem to be progressing much, to really being more content with our progress in the end. Even though they didn't create common formative assessments or analyze student data we were making strides to hopefully get there in the coming years.

Tammy Yood. In her initial interview to start the school year, Tammy defined a PLC as a group of teachers that are getting together to collaborate on their teaching practice. Comparing it to professional development initiatives of the past, she has not really seen anything like it come around since she has been teaching. "The biggest difference being that we are talking with fellow science teachers about what we are doing; what worked, what did not work, and why." She liked that we are guided by a good set of goals to look more in depth about what we are doing. Tammy hoped that personally, the PLC would help her connect better with students. By getting better at what she asks the students to do, she is looking forward to seeing a higher level of

learning. The biggest change it brings about for her is becoming more aware of what she is doing and her own processes in the way she teaches. She thinks PLCs will make her a better teacher and students better learners so we can see those higher processes. Tammy was already aware at the start of the school year of the double whammy that came from the first year of PLCs on top of the changing NGSS that govern our curriculum.

In her second interview, Tammy defined a Professional Learning Community as a group of people who get together on a regular basis to discuss collectively what could happen or what they could do and change to help students succeed. She described the departments work so far during the school year as beginning with setting up and deciding what we thought the PLC was going to be and then shifting to cover what the department's needs were at the moment. She said that the team was not quite as long term goal oriented as they were in the beginning but have instead worked to define what our standards are and what students need to know. Tammy shared that they had always been a strong department and were able to then form a good working PLC. "They were never afraid of meeting and getting things done." She does think we need to define more of what we want our science PLC to do and that it would help going forward. She says the PLC hasn't yet had an impact on her teaching but thinks this may still be coming down the road. Tammy thinks working on our PLC and the new standards at the same time has definitely complicated matters, because we cannot continue with the PLC as the district envisions us until we figure out the standards. Tammy says it's important to remember when you get that many different people in a room with their differing opinions that it is going to take time to accomplish things. She thinks it is okay to go slow, it really is a marathon and not a sprint.

In the third interview, Tammy defined as PLC a something that allows teachers to get together and discuss their practices, whether it is differentiation, assessment, pedagogy, how that all fits together and how they can help each other become better teachers. She emphasized again that the new standards (NGSS) made things more difficult because we got away from looking at common formative assessments but said we still learned and accomplished. Tammy summarized the work this year as breaking down standards that are very confusing and unpacking them. She thinks the department is and continues to be committed to the school we want, but acknowledges it is a slow changing process. The time with her department has kept the standards in her brain easier and knowing how frequently we met allowed time to discuss things that came up with the department. She is not really sure that her understanding and perceptions of the PLC have changed, mostly because we spent a lot of department time going through standards. The biggest thing she is looking forward to is what the coming years hold.

Tammy showed maturity in her approach to the Professional Learning Community implementation throughout the year. She realized it was going to be a slow-moving process from the beginning and this can be seen in how she discussed what she thought the PLC would be doing this year. Remaining level headed has been good for her, but she would also like to see things move forward now that we have done so much work with the standards. She admits that as of yet, the PLC has not impacted her teaching or her students, but remains optimistic that it still has the power to if we keep putting in the work to later on be successful.

Deb East. In the first interview to start the school year, Deb defined a Professional Learning Community as a learning community where she is with people of

her same content area and learning how to better teach and deliver content. She saw this

as different from educational initiatives of the past because it brought together the whole

department and not just the two or three teachers who were teaching the same class. "The

idea of having more cross-curricular input was exciting." She knew starting the year we

were not going to be able to accomplish everything, such as seeing student growth yet

this year. Ultimately she thought we should see a growth from only kind of knowing what

we are doing to seeing the progress being made each PLC meeting. "Potential impacts of

the PLC included more knowledge about the standards for us as teachers. By unwrapping

the standards we should become more comfortable with what we are asking students to

learn." With student learning, she was concerned about seeing growth because in her

opinion our students do well overall and there are always going to be students who are

not willing to do anything. Deb saw a chance for professional growth in the science and

engineering practices within her classroom. She said switching focus from her asking

questions as the teacher to students being able to ask questions is a shift that could take

place in her classroom. When asked about the steps she saw us going through this first

year of PLC, she commented that with us meeting in only 30 minute periods that it is

really going to take time to learn the PLC process and that we would not be able to get to

common formative assessments yet this year. It would be all right as long as we were

able to keep making progress each meeting.

  In the interview during the middle of the school year, Deb East defined a PLC as

a community of people that get together on a professional level to work at improving the

learning that goes on with students. From the beginning of the school year to about half-

way, she said she understood better that the PLC implementation is going to be a long-

term process not just a year thing. Although it was bumpy to start, she thought the team made progress as they settled into their respective roles and figured out how to stay on task. Deb said so far though, the PLC hasn't done much to impact her teaching. She remains optimistic that it will, but that she really needed to get a handle on the standards before the PLC could take place so not much had changed as of yet. With the changing of the standards she saw this as a good time to start the science department PLC. She says the time that was allotted to us helped in understanding the standards, and she was not sure how it would have been possible to do all that we did this year without that time. To stay successful with the PLC, Deb wants to make sure that people are taking on the different roles, specifically the learning team facilitators, and that they understand the purpose and expectations of these roles.

During the third interview, Deb defined a PLC as a group of people with a common sort of goal, like in this case teaching science, where we try to use common assessments and make sure everyone is on the same page and everyone is doing what they can so that everyone is learning. "It is really a community of everyone helping everyone." Although she realized this process was going to be hard, she did not think it would take us a couple of years to actually get fully in to it. She attributes some of this to the new standards, but either way the learning curve would have been large and the adjustments would take time. Deb described the process from the 2016-2017 school year as starting out with our norms and what the group roles would be. Then she thought we shifted to looking at the standards, and the idea of which standards were priorities, and then sort of stalled there. It is clear to Deb that learning for all is the core purpose of the MHS science department. She said we continually focus on student learning and all have

such a love for science and want to teach science to our students. Each teacher has a

vested interest and we want the science department to be the best it can be. She said we

have the shared understanding and commitment to the school we are attempting to create.

Deb saw the biweekly department meetings as a positive thing because she enjoyed

getting together with her department but does not think it has made any impact on student

learning thus far. She thinks they will still get there, but sticks with the idea that we need

to be patient and make sure to focus on the task at hand.

       With Deb, as the school year progressed I think her perceptions of the PLC

changed as she began to realize what a long process it is really going to be. She saw, and

sees, the benefit in the department time together. That time is well spent learning more

about the standards that will make the basis of the PLC but is well aware that after the

norms were established for their PLC the other facets never really fell into place. Like

Tammy, she still thinks those added benefits can come but as of yet there has been no

impact on student learning. As student learning should be a central focus for the team,

she and I both think this needs to become a priority. Only then can the potential of the

PLC be reached and it will also be helpful to make sure we are teaching what we need to

in the best way that we can to address the standards.

       Paul Yang. During his first interview, Paul Yang admitted that the PLC was all

new to him and defined the process as communication among teachers. "Getting together

and seeing if you can right the ship if you have any wrong." Being in education for 33

years, he worried that a PLC was another example of education making circles. He

thought it was taking an idea we have done before and calling it something different. He

admits it would be easier to buy into the whole process if he was a younger teacher who

was brought up in it. Before even beginning the school year, Paul was confident that the

PLC would be productive because it allows more communication among the department.

He did not anticipate ACT scores or class grades going up but it would hopefully allow

us to get rid of things that do not work and bring in things we have not tried before. Paul

sees the PLC as a chance to emphasize what you do well as a teacher. "A sort of pat on

the back that he does not always see teachers receive." After training, he envisioned us

going through the year working on vocabulary terms to get everyone on the same page

and then using that vocabulary to unwrap standards.

In the second interview, Paul defined a Professional Learning Community as

colleagues getting together meeting, collaborating, and bouncing ideas off each other to

improve or give new appeal to a unit of instruction. Half-way through the year he said his

understanding of the PLC hadn't changed because he really did not feel we had done the

PLC. He felt it got entangled with our new standards. His wish at that point was to figure

out a clear-cut path where we could really separate the two (NGSS and PLC) and take the

time to help each other out in the classroom rather than just focusing on the standards.

Paul admitted that he did not feel as if the PLC meetings had made any impact on his

teaching but that they did help with his understanding of the NGSS. Although the

standards are not totally clear to him there is much more awareness about their intent. If

we could start the year all over, Paul would have liked to see a distinction made between

PLC time and time to work on the standards.

In the last interview, Paul Yang defined a PLC as getting together with colleagues

to bounce new ideas off each other to try and take students to a new level. He did not

think his understanding of the PLC process really changed throughout the year but

realizes that it is still evolving. He said with so much work on the standards, he did not

feel like we spent very much time developing the PLC. Paul did say that the department

has continued to be successful in understanding each other. He said, "We never needed a

lot of boundaries, don't have a lot of fighting. We get along with each other, and if there

is ever a disagreement we can talk about it." He also believes it is obvious we all want

learning to be our core purpose and we show this by the way we talk to each other. "We

all enjoy hearing what other teachers are doing in an attempt to improve our own

classroom." As far as priorities and goals go, he admits that short-term we have an idea of

what we want to accomplish but long-term is too cloudy with changes still coming. Paul

thinks the biggest benefit to this year was that it should make next year easier since we

were able to get a lot of bumps and hurdles out of the way to continue our work.

As the school year progressed, Paul emphasized more and more how he feels like

we missed out on some of the PLC and its benefits because of our focus on the standards.

We do need to know what we are teaching, and that really should come from the

standards, but Paul sees an importance moving forward to separate our work with those

two things. His perception of PLCs really started out as one more educational hoop to

jump through but as the year went on he saw the benefit of being able to talk with other

science teachers about what things were working or not working within the classroom. I

think his frustration with the process was clear, and he would advise us to spend less time

focusing on vocabulary of the PLC and more time talking about the action we could take.

Chris King. In his first interview Chris King describes a PLC as a mindset and

way of thinking together. "The focus is on what the students are accomplishing rather

than always what the teachers are doing. It is a scheduled event." He sees it as different

from educational initiatives of the past because teachers get a lot more ownership of the process. He likes that teachers are the ones really defining what it is and get the say it what they emphasize. He thinks it is different because it is an ongoing process with continual support. Chris was aware that we would see improvement slowly with the students because it is a gradual process but we can be successful just by how we work together. He likes the idea of being a systematic improvement rather than any individuals trying things on their own. "Being built in to our system we can do it all the time, rather than a do it once and move on sort of mentality." The organization and whole district working on it will help build synergy where the energy can feed in to something bigger than just one person or one school.

During interview two, Chris defined a PLC as people that have a common subject material, or common practices they are trying to teach so they share the best skills in order to get there. He commented that his understanding of the PLC has continued to evolve throughout the year because we started with this singular definition but we continue to incorporate things our department needs. "This focus on department needs rather than on an individual standard was different than how the PLC was first introduced." He thinks the team has been most successful because of our open dialogue. "We are fine talking to each other and don't have any hidden agendas. Learning to work together in that open way makes for successful conversations and eventually we'll get to the point where the conversations make an immediate difference in the classroom." The impact he has felt on his teaching is really the way he thinks about instruction differently. He likes that it will continue to evolve what he teaches and how he teaches although he admits the results probably are not tangible yet. Chris thought the PLC and NGSS

together made for a more challenging start but does admit they can work together. He thinks the department time together really helped his NGSS understanding because of all the sharing of resources and focus on certain aspects. Without looking at and talking about the insight team members brought from others outside of the district, he doesn't think we could possibly be to the point we got to this year.

Interview 3 found Chris defining a PLC as colleagues working together for a common goal on a common curriculum. He realizes his opinions of PLCs have gone down since the start of the year saying, "I'm maybe not as on board as I was from the start when we looked at the process and were making sure to form common assessments." His biggest issue with this is that we are unique as sometimes only one or two teachers teach a given class. Describing the process the science department went through this year he said we spent a lot of time looking at the NGSS and that was important. "We did not get to common assessments because we are still trying to match up current curriculum to the new standards. The most successful part of the PLC has been collegiality which has been excellent." He feels like we talked and shared more than ever before and that can only make us stronger as we evolve together. Chris says everyone within the MHS Science Department tries to teach everybody. We are not so set in our ways that we only do things one way, instead we really try to adapt to what our students need. "A lot of our discussions have revolved around moving our curriculum a certain direction and that helps to show that we have a shared understanding of and commitment to the school we are attempting to create." He thinks the biweekly meetings during the 2016-2017 school year were great because the team was able to get together and reflect

on our practice. That way instructors are able to grow faster because you can have good ideas and share with them your colleagues.

In Chris King's three interviews it becomes apparent that he thinks this school year accomplished some much-needed things but that he does not see PLC as something that can move the science department forward. He admitted to losing a little faith in the process and a lot of it has to do with the fact that we do not all teach the same content which makes common formative assessments and data analysis hard. With that being said, he loves the time the department is able to work together and that allows us to work on some agendas which are forced on us, things administration asks us to get done each year.

Common Themes

Three common themes surfaced between the five teachers:

1. A Professional Learning Community is not something that can be done in one year

2. Focusing on too many things slows progress.

3. Any time the department gets to spend together is beneficial

I don't think any of the participants thought the PLC would be perfectly implemented after only one year, but they have a better idea of what a long-term project it is going to be now that the year is over. I personally was hoping we would make more progress this year but Tammy realized from the start it was a big undertaking.

Without clear separation between the new science standards and the newly implemented Professional Learning Community the department got bogged down. Trying

to accomplish two things at once, although both were important, really slowed the progress the team made in their first year.

Even with the slow progress, all five team members agreed that the time they spent together during the school year led to positive things. They made more progress on their standards than they had since they came out. The frequent meetings during the week made each teacher more aware of what the other teachers did in their classroom. I think it helped to deepen relationships and build trust as well. Together the team was able to accomplish tasks that the guidance counselors and principals asked them to such as building a class schedule, updating the program of studies, analyzing Iowa Assessment data, and putting together a school board presentation. While these tasks did not necessarily move the PLC forward, it did benefit the school and because of this the department time was a very valuable tool.

Chapter 4 Reflection on the Project

Impact on the Professional Community

In the literature review of chapter 2 the essentials of a Professional Learning

Community were listed as collaboration, collective commitments, norms, goal-setting,

assessment, interventions, and ensuring the curriculum. These would help address the

four questions of the PLC:

1. What do we want students to know?

2. How will we know they have learned?

3. How will we respond if they don't learn?

4. How will we extend learning for those that do learn?

After interviewing the MHS Science Department during their first year of PLC

implementation it appears as if we made progress toward some of these things but also

became stalled.

In addressing the question of what do we want students to learn, the five teachers

collaborated very well while working toward this goal. The thirty minute meetings twice

a week allowed the team the time to sort through their understanding of the standards. We

were able to make collective commitments to each other and adhere to a set of norms

which helped guide our collaboration. These both were able to keep the group focused

and guiding our work throughout the year.

The problems began when the pace of the PLC slowed. Without being able to

decide what students needed to know in the understanding of the standards, the next three

questions were left unaddressed in this first year. That also meant that no long-term goal-

setting took place, no common formative assessments were developed, no systematic intervention took place, and we have not yet ensured the curriculum.

This does not result in a dire situation; the department laid a lot of ground work for the team going forward. The five educators who are a part of the team all agreed that the work they did this year was necessary and helped them to understand the standards better. The PLC remains hopeful that we can use the work to propel us forward next year as we move on to address other aspects of the PLC.

Recommendations going forward

I think the biggest thing we need to do going forward is differentiate our work with the NGSS and our PLC. While we do need to know our standards in addressing the first question of the PLC, if we wait until we have an understanding of all of the standards I'm afraid our PLC does not move forward for several more years. If the format for PLC time stays the same as it did this year, we could devote one day a week to NGSS and unpacking of the standards and one day a week to the PLC. This way both aspects move forward. It is essential for the department to see progress being made in order for teachers to not lose faith in the professional development.

Even though the science department often has classes that are only taught by one or two teachers, we need to focus on the overlapping pieces of science in order to administer common formative assessments. While there may not be content that overlaps from Earth and Space Science, to Biology, to Chemistry and Physics, we can work on common themes and the order the courses progress in. These themes could come from the science and engineering practices of the NGSS, such as analyzing and interpreting data, or from the crosscutting concepts of science, such as structure and function. We

need to spend less time on course differences and instead focus on the similarities we do share.

Lastly, I would try to ensure teacher buy-in before moving forward. In our school, PLCs were something decided by administration, specifically the superintendent, and then passed down to teachers. This top down approach to professional development doesn't always inspire teachers to join in. Without buy-in from each team member, the resistance to the process will build up and stall progress. To combat this, early on in the process make sure each team member has a say and believes in the norms and collective commitments that are made. The science department did very well will this early in the year and then as the year went on we strayed farther and farther from what we had established as a functioning PLC.

Project Continuation and Extension

This research project followed the science department with their first year of Professional Learning Community implementation. The project could be continued for multiple years in its current format or cut down to just include the electronic questionnaire to reduce the burden of conducting and transcribing video interviews. The questionnaire would give an overall picture of how implementation is progressing. This would allow a researcher or interested part to fully see the implementation including the use of common formative assessments. Administering these would facilitate data based decision making and possibly allow the group to make changes going forward.

Another way to extend the research project would be to include additional departments. By including another department such as Math or English, we could investigate if the implementation has gone the same way. Comparing the departments

might allow for some cross-curricular work on common issues or themes that were identified. It would allow for a larger Professional Learning Community and give a bigger picture of how the PLCs have been used throughout the high school.

Professional Growth

Completion of this research project definitely made me grow as an educator. Having only been in education for 5.5 years, I still have a lot to learn. One of the easiest ways to learn is from those who have been in the profession for longer than I. By conducting interviews with the other members of my department, I had some really great conversations about both PLCs and education in general.

Talking with Tammy I saw her approach of being a motherly figure, someone who has high expectations of her students and does her best to support them on their way there. With Deb, her philosophy on education is to lay very clear ground rules for behavior in her classroom. She likes to keep the students so busy that they do not have time to mess around or be distracted about what else is going on within the classroom. Her rigid schedule is something that works well for both her and her students. Interviewing Paul, he helped me to understand how he sets up his classroom to reach the whole spectrum of student abilities from the very low to the very high. While he does not like educational buzz words like differentiation, he is possibly the best teacher I have seen implement it. Chris has been teaching the longest and I think his philosophy on education is what I can learn the most from. He wants every student to succeed, he wants them to be challenged. What he does not want is for teachers to have to do more work in the process. He continually reminds us that it is on the students to take advantage of opportunities within the classroom and no matter what a teacher plans if the students

don't own their learning it will still be hard to make progress. Sometimes we get so bogged down with the work we have to do, we don't have the time to just talk about philosophy of education. Taking the time to have the interviews allowed a set time for growth through conversation.

Researching PLCs for this project also gave me a strong background that let me take on some leadership within the PLC and within the school in general. While I don't necessarily have more experience implementing the PLC, I did a lot of background research on how to form a successful PLC and what things are needed to sustain and maintain it. I shared this information and different resources with the administrative team and our school improvement coordinator. During a weekly staff meeting, I presented research on how other high schools approached PLCs that I had learned about in my research. Our school improvement coordinator and I also compiled articles to address issues that arose during the first year of our high schools implementation.

Future directions for my professional growth will be tied with the PLC for the next few years. This year both Chris King and Paul Yang decided to retire after long careers in education. This opens the door for me to help shape our department as we add two new teachers. By no longer being the least tenured in the department I think I will naturally have more of a leadership role. Being able to mentor a couple of new teachers and show them where we are within the PLC implementation and also where we hope to go will do a lot to help me grow as a person and an educator.

References

Anrig, G. (2013). *Beyond the education wars: Evidence that collaboration builds effective schools.* New York: Century Foundation Press.

Anthony Carnevale: Research Professor, Director, Center on Education and the Workforce Georgetown University Washington, D.C. (2011, March). *T+D, 65(3),* 66+. Retrieved from http://sandhills.idm.oclc.org.proxy.lib.uni.edu/login?url=http://go.galegroup.com proxy.lib.uni.edu/ps/i.do?p=AONE&sw=w&u=uni_rodit&v=2.1&it=r&id=GA %7CA254244507&asid=6d9d19cb3a06e55cd598179aa1a35cfa

Barber, M., & Mourshed, M. (2009). *Shaping the future: How good education systems can become great in the decade ahead—Report on the International Education Roundtable.* Singapore: McKinsey Company.

Black, P., & William, D. (1998). The formative purpose: Assessment must first promote learning. In M. Wilson (Ed.), *Towards coherence between classroom assessment and accountability* (103rd Yearbook of the National Society for the Study of Education, pp. 20-50). Chicago: National Society for the Study of Education.

Blanchard, K. (2007). *Leading at a higher level: Blanchard of leadership and creating high performing organizations.* Upper Saddle River, NJ: Prentice Hall.

Bryant, A. (2014). Management be nimble. *New York Times*. Accessed at https://www.nytimes.com/2014/01/05/business/management-be nimble.html?_r=1 on February 19, 2017.

Bybee, R. (2013). *Translating the NGSS for Classroom Instruction*. Arlington: National Science Teachers Association.

DuFour, R. (2015). *In Praise of American Educators and How They Can Become Even Better.* Bloomington, Ind.: Solution Tree.

DuFour, R., DuFour Re., Eaker, R., Many, T. W., & Mattos, M. (2016). *Learning by doing : A handbook for professional learning communities at work*. 3rd edition. Bloomington, Ind.: Solution Tree.

DuFour, R., & Marzano, R.J. (2011). *Leaders of learning; How district, school, and classroom leaders improve student achievement.* Bloomington, IN: Solution Tree Press.

Eastwood, K. W., & Louis, K. S. (1992). Restructuring that lasts: Managing the performance dip. *Journal of School Leadership, 2*(2), 212-224.

Editorial Projects in Education Research Center. (2011, June 29). Issues A-Z: Professional Development. *Education Week.* Retrieved February 19, 2017 from http://www.edweek.org/ew/issues/professional-development/

Elmore, R. F. (2003). *Knowing the right thing to do: School improvement and performance-based accountability.* Washington, DC: National Governors Association Center for Best Practices.

Fullan, M., & Quinn, J. (2016). *Coherence: The right drivers in action for schools, districts, and systems.* Thousand Oaks, CA: Corwin Press.

Glasersfeld, Ernst von (1989) Constructivism in Education. In: T.Husen and T. Neville Postlethwaite (eds) The International Encyclopedia of Education. Research and Studies, pp. 162-163. Supplementary Volume 1. Oxford: Pergamon Press.

Halvorson, G. C. (2014). Getting to "us". *Harvard Business Review, 92*(9), 38.

Hattie, J. (2009). *Visible Learning: A synthesis of over 800 meta-analyses relating to achievement.* New York: Routledge.

Hattie, J. (2015). *The effective use of testing: What the research says.* Accessed at http://www.edweek.org/ew/articles/2015/10/28/we-arent-using-assessments correctly.html on February 19, 2017.

Kanold, T. D. (2011). *The five diciplines of PLC leaders.* Bloomington, IN: Solution Tree Press.

Katzenbach, J. R. & Smith, D. K. (1993). *The wisdom of teams: Creating the high performance organization.* Boston: Harvard Business School Press.

Lencioni, P. (2005). *Overcoming the five dysfunctions of a team: A field guide for leaders, managers, and facilitators.* San Francisco: Jossey-Bass.

Many, T. W., & Sparks-Many, S. K. (2015). *Leverage: Using PLCs to promote lasting improvement in schools.* Thousand Oaks, CA: Corwin Press.

Marzano, R. J. (2006). *Classroom assessment and grading that work.* Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano, R. J., Warrick, P., & Simms, J. A. (2014). *A handbook for high reliability schools: The next step in school reform.* Bloomington, IN: Marzano Research.

McLaughlin, M. W., & Talbert, J. E. (2006). *Building school-based teacher learning communities: Professional strategies to improve student achievement.* New York: Teachers College Press.

National Center for Educational Achievement. (2009, January). *Core practices in math and science: An investigation of consistently higher performing school systems in five states.* Austin, TX. Accessed at

Newman, F. M., & Wehlage, G. G. (1996). Conclusion: Restructuring for authentic student achievement. In F. M. Newmann & Associates (Eds.), *Authentic achievement: Restructuring schools for intellectual quality* (pp. 286-301). San Francisco: Jossey-Bass.

O'Hora, D., & Maglieri, K. A. (2006). Goal statements and goal-directed behavior: A relational frame account of goal setting in organizations. *Journal of Organizational Behavior Management,* 26(1), 131-170

Pfeffer, J. & Sutton, P.I. (2000). *The knowing-doing gap: How smart companies turn knowledge into atction.* Boston: Harvard Business School Press.

Pinchot, G., & Pinchot, E. (1993). *The end of bureaucracy and the rise of the intelligent organization.* San Francisco: Berrett-Koehler.

Ragland, M. A., Clubine, B., Constable, D., & Smith, P. A. (2002, April). *Expecting success: A study of five high performing, high poverty schools.* Washington, DC: Council of Chief State School Officers.

Reeves, D. B. (2006). *The learning leader: How to focus school improvement for better results.* Alexandria, VA: Association for Supervision and Curriculum Development.

Senge, P., Ross, R., Smith, B., Roberts, C., & Kleiner, A. (1994). *The fifth discipline fieldbook: Strategies and tools for building a learning organization.* New York: Doubleday.

Schmoker, M. (2005). No turning back: The ironclad case for professional learning communities. In R. DuFour, R. Eaker, & R. DuFour (Eds.), *On common ground: The power of professional learning communities* (pp. 135–154). Bloomington, IN: Solution Tree Press.

Appendix A: Results from Electronic Questionnaire

The following questions were answer with a number of 1-10. A score of 1 means it is not true of our team, a 5 means our team is addressing it, and a 10 means it is true of our team. The rest of the scores fall on a continuum.

	Madi Ramaekers			Deb East			Tammy Yood			Chris King			Paul Yang		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
We have identified team norms and protocols to guide us in working together.	10	7	**-3**	10	10	**0**	10	10	**0**	10	10	**0**	10	10	**0**
We have analyzed student achievement data and have established SMART goals that we are working interdependently to achieve.	3	5	**2**	1	2	**1**	2	1	**-1**	4	5	**1**	5	4	**-1**
Each member of our team is clear on the essential learnings of our course in general as well as the essential learnings of each unit.	3	5	**2**	5	4	**-1**	2	7	**5**	5	10	**5**	3	3	**0**
We have aligned the essential learnings with state and district standards and the high-stakes exams required of our students.	3	5	**2**	5	4	**-1**	2	5	**3**	5	5	**0**	5	3	**-2**

We have identified course content and/or topics that can be eliminated so we can devote more time to essential curriculum.	2	3	1	1	5	4	2	6	4	5	8	3	4	7	3
We have agreed on how to best sequence the content of the course and have established pacing guides to help students achieve the intended essential learnings.	1	1	0	1	1	0	2	4	2	5	5	0	3	4	1
We have identified the prerequisite knowledge and skills students need in order to master the essential learnings of our course and each unit of the course.	3	3	0	5	1	-4	2	3	1	5	10	5	3	4	1
We have identified strategies and created instruments to assess whether students have the prerequisite knowledge and skills.	1	2	1	1	1	0	1	1	0	4	5	1	3	3	0
We have developed strategies and systems to assist students in acquiring prerequisite knowledge and skills when they are lacking in those areas.	1	1	0	1	1	0	1	3	2	4	3	-1	3	3	0
We have developed frequent common formative assessments that help us to determine each student's mastery of essential learnings.	1	1	0	1	1	0	1	1	0	4	5	1	3	2	-1

We have established the proficiency standard we want each student to achieve on each skill and concept examined with our common assessments.	1	1	**0**	1	1	**0**	1	1	**0**	5	10	**5**	3	2	**-1**
We have developed common summative assessments that help us assess the strengths and weaknesses of our program.	1	1	**0**	1	8	**7**	1	1	**0**	5	7	**2**	1	2	**1**
We have established the proficiency standard we want each student to achieve on each skill and concept examined with our summative assessments.	1	1	**0**	1	3	**2**	1	1	**0**	5	10	**5**	1	2	**1**
We have agreed on the criteria we will use in judging the quality of student work related to the essential learnings of our course, and we practice applying those criteria to ensure consistency.	1	1	**0**	1	1	**0**	1	1	**0**	5	5	**0**	2	3	**1**
We have taught students the criteria we will use in judging the quality of their work and have provided them with examples.	1	1	**0**	1	1	**0**	1	1	**0**	4	5	**1**	2	1	**-1**
We evaluate our adherence to and the effectiveness of our team norms at least twice each year.	5	8	**3**	10	5	**-5**	2	10	**8**	5	10	**5**	2	3	**1**

We use the results of our common assessments to assist each other in building on strengths and addressing weaknesses as part of a process of continuous improvement designed to help students achieve at higher levels.	1	1	0	1	1	0	1	1	0	5	5	0	2	4	2
We use the results of our common assessments to identify students who need additional time and support to master essential learnings, and we work within the systems and processes of the school to ensure they receive that support.	2	1	-1	1	1	0	1	1	0	5	5	0	1	5	4

In the table above, the gray highlights show instances where the participant rated the PLC implementation consideration lower after the 2016-2017 school than before. The yellow highlights show PLC implementation consideration growth equal to or greater than 3. Averages were left off due to the small sample size.

Appendix B: Madi Ramaekers Interview Transcriptions

<u>Interview 1</u>

1. What is your name?
   - Madi Ramaekers

2. How long have you been a teacher and specifically how long have you been a teacher at Marion?
   - Been teaching for 5 years – all at Marion

3. What subjects are you currently teaching and what have you taught in the past?
   - Am teaching Chemistry and AP Chemistry currently, have also taught Physics and General Science Motion in the past

4. In your own words, how would you define a Professional Learning Community (PLC)?
   - To me, a Professional Learning Community is a group of people who work to build up their understanding in order to improve their instruction

5. In what ways do you think PLCs are similar and different from educational initiatives of the past?
   - As a fairly new teacher I don't have a lot of experience with past initiative, but I feel like some people have compared it to the idea or work on curriculum maps of the past in terms of the scope and sequence and common planning ideas
   - Different because it isn't a 'quick fix' but instead requires a whole school commitment. We also have built in time during the school day which is different than what I've seen since I've been teaching

6. How will we know if our PLC is productive?
   - I think we will know if our PLC is productive based on the impact it has on our understanding as teachers and our students understanding of science

7. What do you see as the biggest obstacles to PLC implementation?
   - I think our biggest obstacle to implementation will be getting all of our department on board and staying focused on getting better together. Without a lot of time for each meeting, it will be essential for success to keep to an agenda

8. What reservations, if any, do you have about forming professional learning communities?
   - I feel a little nervous about the vulnerability that you get with a PLC because it will force me to be honest about what is working in my classroom and what is not working

9. What do you envision to be the biggest impact of the PLC in terms of your teaching and student learning?
    - Biggest impact on student learning is the consistency the PLC time will add between required classes. As the chemistry teacher it would be valuable to me to know exactly what students should have as far as content and other experiences before they get to my room.

10. Is there any specific area of instruction you would like to see improved through your PLC work?
    - One thing I know I am missing in my chemistry classes is student driven lab work. While a lot of the labs aren't 'cookbook' they are fairly prescribed in terms of the questions students are answering, I would love to find a way to open that up while still being able to manage the lab work.

11. What do you think are the biggest possible impacts of PLC implementation for our department, our school, and our district?
    - In all of those levels it gives us some uniformity to work toward. The PLC idea helps build in leadership and teacher input all at the same time.

12. What steps do you see us taking through this first year of PLC implementation?
    - I think we are going to work on building common formative assessments, analyzing student data, and making data informed decisions.

Interview 2

1. In your own words, how would you define a Professional Learning Community (PLC)?
    - I would say a professional learning community is a group of teachers who spend time learning together in order to try to improve their instruction and student learning

2. How do you think your understanding of the PLC has changed?
    - I don't think it has changed in terms of the definition, but I think the process is a bit different than I anticipated mainly because of how long it is taking us to address the question What do we want students to learn? This is a result from our new science standards

3. How would you describe the steps we have gone through with our PLC so far this year, and where do you see us going through the rest of the school year?
    - We have spent the majority of our PLC time unpacking the standards and seeing where we are already addressing them, or where the most natural fits for them are in terms of classes

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?

- We have succeeded in setting up a collaborative and community feel to our team, but I think we need to continue to work on students as are focus. Many times our meetings have become about us as teachers.

5. In what ways has the professional learning community been what you expected and in what was has it differed from your expectations?

- I expected to have great discussions, and that we have, and it has also done a ton for our understanding of the new standards. It has been different in just how slow the process has been.

6. To this point so far, do you think the PLC has had any impact on your teaching?

- No, but not because it isn't valuable just because we are still in such an early stage

7. In your opinion, is this PLC something that our school can sustain and maintain?

- Yes, I think the collaborative part of it is something that is very do-able

8. Knowing what we know now, what would you want to see done differently to start the year?

- I don't think so. We had the training at the end of last school year, and time at the beginning of this school year but you don't really know what you don't know until you get into the routine of 'doing' the PLC so I think we were as prepared as we could have been

9. In addition to our first year of PLC implementation, as a district we are also seeing our first year of implementation of the TLC grant and the changing of the Iowa Core Science to include the Next Generation Science Standards (NGSS).
   a. Do you think these three things complement each other?
      - I do think they complement each other, but I think the NGSS has slowed our PLC. We've spent so much time trying to get everyone up to speed that we have lost the focus on learning
      - I do think the TLC grant has been good to get some teachers into leadership positions that assist the PLC

10. Has the PLC helped with your understanding of the NGSS?
    - I think it has, because even though I was familiar with the NGSS explaining it to my coworkers has done a lot to increase my understanding of it

11. Do you think the district has supported us in our PLC formation?
   - Very much so. They have given us time, which is so valuable, and built in the PLC time into the normal day which I think is essential for success.

12. What recommendations would you make to a school district that was thinking about starting to from PLCs?
   - I think it may be beneficial to get team members on board with the PLC purpose and ideals before they just 'jump right in' because otherwise the process is slow to get started

Interview 3

1. If your own words, how would you define a Professional Learning Community?
   - I think a Professional Learning Community is made up of a group of teachers who engage in learning together. It would be best through a process of inquiry, where they test out ideas to see what things tend to be the most successful.

2. How do you think your understanding of the PLC has changed throughout this year?
   - I think the biggest change in my understanding isn't through what we have engaged in this year as a department, where we really kind of stalled mid-year without having made much progress, but more in the research I did about what makes a PLC successful or unsuccessful.

3. How would you describe the steps we have gone through with our PLC this year, and where do you see us going into next school year?
   - This year I think we spent a lot of time trying to understand our new NGSS standards. Although this fits with the PLC in terms of determining what we want students to learn, I think it really kept us from engaging in the practices that make a PLC successful. So I would say we worked to understand what the standards say students should know, and determining how these currently fit into our classes, and seeing what adjustments we might need to make.
   - Next year, I would like to see us tighten up on the standards and have a plan for fitting them all into the required science classes. I would also like to make strides toward administering CFAs and that would also require a timeline as far as scope and sequence of the classes.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?
   - I think we were very successful in terms of our team dynamic. Even when I was frustrated with how things might be going in terms of our PLC direction, I am totally aware that everyone had students' best interests at heart

- I think we need to continue to work on planning. I think it would really benefit us to have a plan going into the PLC meeting rather than sort of making it up when we get there.

5. An important part of the PLC process is communicating effectively. Looking at the continuum, where do you think we fall on the idea that the school has established a clear purpose and priorities that have been effectively communicated.
   - In terms of communicating effectively I think we are in the initiating stage. Key leaders may have an agreement on purpose and priorities, but I think that message has been muddied as it has progressed down to us. I think our administrators or not quite on the same page. If you asked staff what the priorities were, I think you would be a variety of answers.

6. Respond to the following statements in regards to the MHS Science Department

   a. It is evident that learning for all is our core purpose
      - I agree. The Science department wants what is best for students and you can tell that based on how we all interact with students.
   b. We have a shared understanding of and commitment to the school we are attempting to create
      - I think so, yes. We want students who are challenged and realize as hard as we try we won't necessarily catch each and every student but we will do as much as we can to help them
   c. We have made commitments to each other regarding how we must behave in order to achieve our shared vision
      - Yes and no. I think this one isn't always clear because our meetings sometimes get off track and we spend as much time talking about our teaching as we do about student learning
   d. We have articulated our long-term priorities, short-term targets, and timelines for achieving those targets
      - Perhaps we have done this implicitly but I don't think we have anything solid in writing (or typing). We haven't specified priorities, and without that it is impossible to have a timeline for meeting those targets.

7. The first question in a PLC should be, "what do we want students to learn?" How would you describe the process we have gone through this year to try and address that?
    a. Looking at the continuum in front of you, in what state do you think we are currently at?
        - I think we fall between initiating and implementing. On the initiating side, I don't know that we necessarily had teacher representatives who helped to create a district curriculum guide, although maybe we are just following the state guidelines, and on the implementing side we are working in collaborative teams to clarify essential learning for each unit. We are not to common pacing guides, but hopefully that is coming. I guess we are little more toward implementing than initiating.

8. How do you think this year with our biweekly meetings have impacted you? Your students?
    - I think it has made a strong impact on me and my understanding. I was able to develop a better relationship with my coworkers and I also had a much better idea of what they were teaching or emphasizing within their classroom.
    - I think it is too early to see an impact on my students. I think long term, me having a better understanding will impact them in the classroom but we just aren't to that point yet.

9. How do you think your perceptions of Professional Learning Communities have evolved throughout this first school year of implementation?
    - I think going into the year I thought it could make more of an impact initially. I realized it was going to be a slow process that evolved as we learned more and progressed farther, but I don't think I realized just how slow of a process it was really going to be. That led to some frustration during the year that we were wasting our time.

10. Anything else you want to share about this school year in regards to our department time?
    - Even without making much progress as the PLC is concerned, I do think we did some things during our meetings this year that we would have very much struggled to do in years past. So even with the frustration of not really 'doing' the PLC, I do think we made progress as a department that will help out going forward.

Appendix C: Tammy Yood Interview Transcriptions

<u>Interview 1</u>

1. What is your name?
    - Tammy Yood (pseudonym)

2. How long have you been a teacher and specifically how long have you been a teacher at Marion?
    - 10 years all at Marion

3. What subjects are you currently teaching and what have you taught in the past?
    - General Science Matter and Earth and Space Science
    - Has previously taught General Science Motion and astronomy

4. In your own words, how would you define a Professional Learning Community (PLC)?
    - A PLC are a group of teachers that are getting together to collaborate on their teaching practice

5. In what ways do you think PLCs are similar and different from educational initiatives of the past?
    - Similar: I think they are similar, well actually I don't know, I haven't had anything like this come around. Well, I hear a lot of that (come around again), but really it is more because of the new standards. Last year we did peer time, but it wasn't specific, we didn't have goals. In my whole history, I've had a mentor who helped me as a new teacher. I don't know of anything.
    - Different: Different by looking at teaching practice, what is different is being able to talk through with fellow science teachers about what we are doing. What worked, what didn't work, why. Now what is different is we have a good set of goals and look more in depth about what we are doing.

6. How will we know if our PLC is productive?
    - I'm hoping for myself personally, it will be productive when I feel like I am connecting better with the students. Has to start from me to them. I will have to see their response as a better learned response to what I am asking them to do. I should see that higher level of learning.

7. What do you see as the biggest obstacles to PLC implementation?
    - (laughter) The biggest obstacle is that it is a slow-moving process, but we can't move too slow or teachers will think it is the same thing we have always done. I think the biggest obstacle is keeping everyone on a positive note forward and reminding everyone it is a good thing.

8. What reservations, if any, do you have about forming professional learning communities?
   - Ummm, I don't think I have any reservations about it going, I think back to obstacle and observations, I think we'll be good, but if others are meeting a half hour out of their preps every two days a week they could slide. I'm hoping everyone will still continue on.

9. What do you envision to be the biggest impact of the PLC in terms of your teaching and student learning?
   - Biggest change for me is being more aware of what I am do and my own processes, the way I am teaching. It's already making me aware. Should make me a better teacher and them a better learner so we can see those higher processes.

10. Is there any specific area of instruction you would like to see improved through your PLC work?
    - I think we are already doing that with our priority standards, so for us, since we have a new set of standards we are trying to do that PLC and understand the new standards so it's a double whammy. So for me, just getting to understand our new students together.

11. What do you think are the biggest possible impacts of PLC implementation for our department, our school, and our district?
    - I think it is nice as a department, we are common on some of our ideas for what we want each and every student to know before getting out of Marion high School. I like that idea that we are nice and together there and it will make for stronger science students.
    - So as a school as a whole and then a district, as a school, my though process is because we are looking on these science skills we are working on their logical thought process that should carry over to other subjects. If they don't know how to work out a problem at math or have to write something in English. Today we worked on writing a claim and using evidence. As a school we will be stronger as a whole, stronger students will represent the district well. Our PLC work will impact our students, which will just keep growing. I'm assuming, hoping.

12. What steps do you see us taking through this first year of PLC implementation?
    - We are unwrapping the standards and going to look at those standards and improve our teaching with those.
    - I think for us, yeah will we unwrap all the standards or take one standard through the road map. I don't think we are going to get there this year. You just keep going back and redoing parts. Just getting as far as we can on the map.

Interview 2

1. In your own words, how would you define a Professional Learning Community (PLC)?
   - Professional learning community, is a group of people, in our case teachers, who get together on a regular basis to discuss collectively what could be happen, or do, or be changed to help the students succeed

2. How do you think your understanding of the PLC has changed?
   - I don't know that they have changed, other then go with the flow of it. Go with the flow of where the group thinks we need to go.

3. How would you describe the steps we have gone through with our PLC so far this year, and where do you see us going through the rest of the school year?
   - The steps we have gone through, I think the beginning part was setting up and deciding what we though the PLC was going to be about but it is shifting to cover what we think are the needs at the moment. I don't think we are quite as long term goal oriented as we were at the very beginning, but it has come in to some short-term goals
   - We've defined what we feel as a science departments are going to be, we have to figure out our standards before our students know what to do
   - I think the rest of the year will mostly be defining our standards and figuring where they go with each class

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?
   - I think we have always been a strong department, in that we shared our views and we work. We are a good working PLC. We aren't afraid of working and meeting when we are supposed to meet and get things done. I think part of it is we need to define more of what we want to do, I think we just go with well this popped up today so let's do this in our PLC. We have PLC time so maybe we can do this, and it may be helpful to take those short-term breaks, but until we get those science standards figured out how much more we can really do

5. In what ways has the professional learning community been what you expected and in what was has it differed from your expectations?
   - I think it is yes, I don't know that I had definitive expectations. But if I did, it's been what it's been. Us getting together and figuring things out.

6. To this point so far, do you think the PLC has had any impact on your teaching?
   - I don't know, that's a hard question. I don't know that it has. In some respects, the grad class that you and I are taking is a strong PLC in itself. That, I use that a lot to say has changed my teaching but I think you and I are trying to get everyone else to where we are at, so I don't think it has yet.

7. In your opinion, is this PLC something that our school can sustain and maintain?
   - Oh, I think so, I don't know why it couldn't. We always had our own little PLC, we just met after school and figured things out.

8. Knowing what we know now, what would you want to see done differently to start the year?
   - I don't think there is anything that would have changed how we went about things, it was very much a loose interpretation which is okay that's what we needed.

9. In addition to our first year of PLC implementation, as a district we are also seeing our first year of implementation of the TLC grant and the changing of the Iowa Core Science to include the Next Generation Science Standards (NGSS).
   - Do you think these three things complement each other?
     i. I think it has definitely complicated it, because we can't continue with the PLC as the district envisions us, until we figure out the standards

10. Has the PLC helped with your understanding of the NGSS?
    - Well, it has changed my understanding a bit because our grad class has thought about it one way but our PLC is discovering through the school and the district maybe another way to think about it
    - I think it is helpful in a way, because it gives me a little leeway in the classroom to not follow the standards as strictly as we thought from class

11. Do you think the district has supported us in our PLC formation?
    - I think so. Is leaving us alone supporting us? They let us do what we need to do, and they understand that we are working and doing it. Giving us the time to meet, I know it is hard to have common planning, but the school worked hard to give us that

12. What recommendations would you make to a school district that was thinking about starting to from PLCs?
- I would want them to know that it is going to have to be a fluid, loose structure kind of thing. Even if you go in knowing we are going to follow the district's road map, everybody has different road map where that is. When you get that many different people in the room with different opinions, you just have to remember we have a whole year, many years, it's okay to go slow. It's a marathon not a sprint.

Interview 3

1. If your own words, how would you define a Professional Learning Community?
- I think a professional learning community is something that allows teachers to get together and discuss their practices, whether its differentiation, assessment, pedagogy, how that all fits together and how they can help each other become better teachers

2. How do you think your understanding of the PLC has changed throughout this year?
- Ohhhh, (laughter). I think for us, with the new standards that is what made it a little bit more difficult. I think we had high hopes of diving in right away and looking at common formative assessments, but it morphed into really really looking at our standards. It was a good thing it needed to be done, but in some respects it determines how you define the PLC which so we got away from common formative assessments which is one definition, but we still learned and accomplished.

3. How would you describe the steps we have gone through with our PLC this year, and where do you see us going into next school year?
- I think it would be nice to put these new standards that we broke down into practice and then develop CFAS that would address our new standards. It would be nice to see how we could do that.
- I would say we broke down our standards. We have new standards that are very confusing and we did a lot of Unpacking.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?
- Ummmm, I think we were pretty successful in unpacking the ones we unpacked. I think we still need to figure out which standards are going into which class but I don't know that that ins a PLC thing because it isn't going to help my teaching it just is something our department needs to do.

5. An important part of the PLC process is communicating effectively. Looking at the continuum, where do you think we fall on the idea that the school has established a clear purpose and priorities that have been effectively communicated.

- For some reason I'm looking at implementing but let's see. Initiating looks kind of good too. I think that I like that there is a general understanding of purpose and priorities and I think some key leaders have an idea on our purpose and priorities, but I don't think within our administration it is perfectly clear to them. I think some staff have gone through the PLC process and are like 'we've done it, now what do we do?' Within the science department I would think initiating.

6. Respond to the following statements in regards to the MHS Science Department

   a. It is evident that learning for all is our core purpose
      - Yes, I think we show it by our discussions. We have a lot of discussions that we are not just a college prep science but we want to aim for lifelong learning and we have a good balance of those within our classes.
   b. We have a shared understanding of and commitment to the school we are attempting to create
      - I think as a department we are pretty committed to the school we want, but it is a slow process. We're looking at how we are going to achieve that. I do think we have a shared commitment to that, but how you go about that and how we unpack our standards aren't the same.
   c. We have made commitments to each other regarding how we must behave in order to achieve our shared vision
      - I think so, I think we have disagreements but we all get along
   d. We have articulated our long-term priorities, short-term targets, and timelines for achieving those targets
      - I think so, I think before we knew people were retiring we knew where we stood. I don't know that we wrote them out, but we have an implicit understanding. Not explicit.

7. The first question in a PLC should be, "what do we want students to learn?" How would you describe the process we have gone through this year to try and address that?
    a. Looking at the continuum in front of you, in what state do you think we are currently at?
        - That was what we spent our whole year, trying to figure out what we want students to learn
        - Implementing kind of fits us a bit. Um, I think as I look, well between implementing and developing. We have some teachers that don't want to give up favorite units, but I understand that. As a teacher you teach what you like. But I think we really as a department are developing. What do they need to know next, what do they come to us with? We've looked at curriculum pacing, how long does it take to teach these things.

8. How do you think this year with our biweekly meetings have impacted you? Your students?
    - The frequency has kept the NGSS in my brain easier. I knew if I thought of something, we'll meet tomorrow or Monday. I don't know that it has impacted them, but through me thinking about the standards constantly, that has impacted them. I'm not afraid to try things and I have more experience with the NGSS. SO I think it is more just through me.

9. How do you think your perceptions of Professional Learning Communities have evolved throughout this first school year of implementation?
    - I think after coming off of the 2/3 day rah rah PLC session. We each had formulated ideas and we were going to follow this PLC path. And it takes time, which is what some admin kept telling us. It takes time and that is okay, so I think it has changed because we spend a lot of department time going through the standards but we needed to. So, I don't know. I think it has changed, but I'm more curious to see what next year holds.

10. Anything else you want to share about this school year in regards to our department time?
    - I don't think so, I think we did a good job going through our standards and it needed to be done. And going through long term goals will help us get to formative assessments.

Appendix D: Deb East Interview Transcriptions

<u>Interview 1</u>

1. What is your name?
   - Deb East (pseudonym)

2. How long have you been a teacher and specifically how long have you been a teacher at Marion?
   - This is my 20th year of teaching, with all 20 years at Marion

3. What subjects are you currently teaching and what have you taught in the past?
   - Currently teaching Chemistry and General Science, I've taught math, physics, chemistry, general science

4. In your own words, how would you define a Professional Learning Community (PLC)?
   - Um, a learning community where I'm with people of my same content area and learning on how to better teach and deliver our content

5. In what ways do you think PLCs are similar and different from educational initiatives of the past?
   - Well, I think this is focusing on spending more time together as a department. We've spent time together with other people teaching our same classes but we haven't spent this much time together as a department, how am I going to help Biology and how are they going to help improve Chemistry. Cross-curricular in science, improving our practices. I guess that's different. We are always looking at our standards, do you look at curriculum maps and this is sort of looking at it another way but with the whole science department and not just me and Tammy looking at what we are doing in General Science.

6. How will we know if our PLC is productive?
   - I think it is going to be hard, I think we will should see a big growth of from we kind of don't know what we are doing to we are starting to know what we are doing and see more progress being made each meeting. By the end each meeting we should be able to see we have unwrapped at least one standards, we've maybe written a few questions about it, we've gotten some data. I don't think we'll see student growth yet this year, that's long term.

7. What do you see as the biggest obstacles to PLC implementation?
   - I guess we need almost more time. Half an hour twice a week is a little rough. By the time you get in to it you have about 20 minutes to talk and they you have to start wrapping it up because it is time to go. I understand that because we are all busy, but the obstacle is having enough time. I almost feel like if we could meet after school I wouldn't feel such a time constraint. Since we are meeting during my prep period, I still have two more classes left to go today and I want to feel ready for those. To me meeting during our prep periods is tough.

8. What reservations, if any, do you have about forming professional learning communities?
   - Uhhhhh. I don't want it to put a lot of extra work on me. I already spend 10 hours a day doing this or something, I don't want it to be 12 hours a day. I try to have 10 be the limit. Other than it taking more time, more work, it hasn't, we haven't gotten homework. We haven't said do all this and then come back. I don't want more of my time taken up.

9. What do you envision to be the biggest impact of the PLC in terms of your teaching and student learning?
   - I don't know that this year it will be that easy to define that. But I think Eventually, I think I will have learned more about the standards and 'unwrapping them' I will have learned more and be more comfortable with them and be able to say I think we are doing okay at this and this I need some help with. With the student learning, I think our students do really well now. If we are already at a certain level, it is hard to see improvement. Will this help us get at those kids that are failing more? I'm not sure it is, I have certain students that just aren't willing to do anything and saying to them, look we are working at this science and engineering practice today, they aren't going to care. I'm not sure we aren't into this enough yet for me to be able to answer that question yet.

10. Is there any specific area of instruction you would like to see improved through your PLC work?
    - The asking questions and defining problems is supposed to not be me asking questions, probably all of them. I could probably do better at all of them. The practices. There are so many places to improve. Some people after 20 years feel like they got this, but No, I'm not an expert at any of this. It is good to be able to get kids to ask questions, that's a different focus than me being able to ask questions.

11. What do you think are the biggest possible impacts of PLC implementation for our department, our school, and our district?

- One impact is we can't sub for each other which is a big drawback. Me being able to sub for you in Chemistry is a big advantage. Um, but what impacts of the PLC? It gives us more time together as a department. It gives us more perspective. It's interesting, I don't think my perspective on biology will be helpful. It restricts our schedule to meet during our prep periods. IT would be better if we took it out of the prep period. It gives departments more time to talk and hopefully get along better and see eye to eye because I think some departments have problems with that. Making their curriculum more uniform. In 9th grade English one, everyone is teaching the same standards and going toward the same standards. As a district, it would be nice if K-12 we were all K-2 talking about how the kids ask questions and then 3-5 and we get what they've done will impact what we know when we get 9th grade eventually they will have gone through all of this. It's a long term and if this is the be all end all, God's gift to all education we will have it for 50 years and we will students be able to ask better questions

12. What steps do you see us taking through this first year of PLC implementation?

- I think we got off to a start where we were trying to go so far in to it and we have to scale way back and we need to go through these standards and talk about these standards. What do they mean and what do they look like, and how can we start doing things better. It's going to take a long time, I think it will take in our little short periods of time a year to get through, I don't think we'll have common formative assessments written yet this year but that's okay, that's okay. If this is really the be all end all, then we have to put the time into it. We are only, we only unwrapped a portion the first standard this time. We just need to keep making progress each time.

Interview 2

1. In your own words, how would you define a Professional Learning Community (PLC)?

- Uh, it's a community of people that get together on a professional level work at improving the learning that goes on with students

2. How do you think your understanding of the PLC has changed?

- I think I've understood now, and especially talking to other people, that it's going to be a long-term process. It's not a one year thing. It's not a 6-month thing. The length of time its taking us to get something done, it's like a 10-year thing. Or something. I think it is going to take a lot longer that I originally thought.

3. How would you describe the steps we have gone through with our PLC so far this year, and where do you see us going through the rest of the school year?

   - I think it's been a little bumpy at first, but we have made progress in to kind of what our roles are and how to stay on task. I think we'll make more progress as the year goes on. I think the first part is just getting use to the system, and now we are making more progress as far as the standards and everything.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?

   - I think we have succeeded in the fact, that as a science department we all get along well, we all respect each other's opinions and beliefs. We all have a voice. I think we will continue to work on staying on task. I like that you are very good at it's a half hour and we're done. And I think that is good, because we really have to utilize the time that we have. I think we'll continue to make progress with our standards and staying on task.

5. In what ways has the professional learning community been what you expected and in what was has it differed from your expectations?

   - I guess I didn't have a lot of expectations at first, because we are just starting this. I think I thought maybe Amy and Chuck would take more of a leadership role, they would meet ahead of time and say this is what we are going to do and then we would do that. Instead, I think we are all together doing stuff and planning and doing, but I don't know I think we are still learning about all that stuff

6. To this point so far, do you think the PLC has had any impact on your teaching?

   - Ummm, I guess I don't think a lot so far. I think it will when I get more into the standards and what we are doing with the standards, but that is sort of separate from the PLC thing. Right?! I don't know if I'm supposed to separate the standard thing form the PLC thing. So I don't know if it has changed a lot yet, but I do think it will.

7. In your opinion, is this PLC something that our school can sustain and maintain?

   - We can sustain it as a department, the district can sustain it in terms of giving us the time. I don't know if the state can sustain it in terms of the money from the state.

8. Knowing what we know now, what would you want to see done differently to start the year?
   - I don't think we could have done anything differently. You need that first sort of time of going through stuff of failing and changing and failing and changing. I think that is just what happens when you start a new process. We had the training at the end of last year, it sort of got us ready for it, but I don't think we could have done anything differently.

9. In addition to our first year of PLC implementation, as a district we are also seeing our first year of implementation of the TLC grant and the changing of the Iowa Core Science to include the Next Generation Science Standards (NGSS).
   - Do you think these three things complement each other or how was it made it harder?
     i. It's a lot of change at once. I don't know if other departments are having this same issue, but I think it means we have to sort of its okay, it's going to take some time, don't freak out. I've had other people from other departments say we aren't getting anywhere are we done with this yet? No, this is a long-term thing. It's not going to be one year. But I think it is good having the PLC time to do this, I don't know how we would have done it any other way. I don't know how it would be possible, to get all new standards aligned and embedded without that time set aside. I think it is essential to what we are doing. And I don't know how TLC works with that because I thought it was all the same thing.

10. Has the PLC helped with your understanding of the NGSS?
    - Well it helps to have time to go through it, and say what do you think this means, and what does this vocab word mean. I like looking at what classes they are going to go in. and having the support of the department, even having Chuck and Tony there 1) what we do in general science feeds into biology and 2) they have a perspective on teaching general science concepts too.

11. Do you think the district has supported us in our PLC formation?
    - Yes, they've told us this is the time you will do this twice a week. In terms of making the schedule and giving us time during in-service time.

12. What recommendations would you make to a school district that was thinking about starting to from PLCs?

- I would want to make sure that the people that are taking on the different roles understand their purposes and the expectations of those roles AND the fact that for everyone involved it is a long-term process. You have to get used to where are we meeting, and what time, and can you come five minutes late, and where are our supplies. It is a time-consuming process at first but once you lay the groundwork it will be beneficial.

Interview 3

1. If your own words, how would you define a Professional Learning Community?

- I think it is a group of people with a common sort of goal, like in this case teaching science, where we try to use common assessments and make sure everyone is on the same page and everyone is doing what they can so that everyone is learning. A community of everyone helping everyone.

2. How do you think your understanding of the PLC has changed throughout this year?

- I guess I knew it would be hard, I didn't think it would take us a couple years to actually get fully into. I know it's partially with the standards but I think either way there would have been a learning curve for us. I just think it will take us next year with the new people and starting over and eventually we'll get to the common assessment to make adjustments in our teaching. It's just time consuming and its tough.

3. How would you describe the steps we have gone through with our PLC this year, and where do you see us going into next school year?

- We started with our norms and what the roles of the group were. Then we started looking at the standards, and we tried to look at priority standards, we've done a lot of changes. We decided to try to understand the standards and see where they fit in all of our courses. It's where we sort of ended up.
- So I think at first, we'll have to get to know each other. This is the norms and this is how it works. And then I think we'll get into the standards. This is what we think should be taught in this class and this class, etc.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?

- We're successful as a department getting a long and talking cohesively about what is best for the students. Sometimes we lose our focus from

the task at hand. Even if it isn't a PLC task, we lose focus from the other task. We just need to make sure we focus.

5. An important part of the PLC process is communicating effectively. Looking at the continuum, where do you think we fall on the idea that the school has established a clear purpose and priorities that have been effectively communicated.

- Well is this the priorities of the school, or my department? I guess I think we're somewhere between initialing and implementing. I think the leaders know what they want us to be doing and what they have in mind, but I don't think all the staff members could articulate that. A lot of people would have a general understanding. And some of the people aren't going to want to do this. Everywhere you go people aren't going people are going to like what they are doing, so they only participate begrudgingly.

6. Respond to the following statements in regards to the MHS Science Department

   a. It is evident that learning for all is our core purpose
      - Yes, for sure. I think it is just obvious. We are focused on student and student learning. We have such a love for science and want to teach them science. Just from our discussions it is clear we want to do what is best for students in learning their science.
   b. We have a shared understanding of and commitment to the school we are attempting to create
      - Yeah, everyone has a vested interest and we want MHS to be the best place possible. The item and commitment we put in is wanting to put the Marion Science Department the best it can be.
   c. We have made commitments to each other regarding how we must behave in order to achieve our shared vision
      - I don't know about how we must behave, we're not kindergartners. I think we have made a commitment to each other for everyone to do the best job they can do. To be caring, nurturing people. I think we all work together and have a commitment to that process.
   d. We have articulated our long-term priorities, short-term targets, and timelines for achieving those targets
      - That is a little tougher maybe. Yeah, I don't know if we have long-term priorities. Short-term, each class we teach how did that go, how can we do that better, but long term priorities haven't been developed well enough yet.

7. The first question in a PLC should be, "what do we want students to learn?" How would you describe the process we have gone through this year to try and address that?
    a. Looking at the continuum in front of you, in what state do you think we are currently at?
        • Well, looking at the new standards and trying to understand the new standards. We want students to learn these standards, so we need to understand the standards before we are able to teach them.
        • I guess maybe initiating. There is some of implementing. Ummm, I think we are making an effort, we're trying but we're in the beginning stage. So I think we are trying to do that, but some are reluctant to give up favorite units. That's me for sure. I guess we haven't seen an essential standard that relates to simple machines yet, but that is part of the process of going through this.

8. How do you think this year with our biweekly meetings have impacted you? Your students?
        • I like getting together as a science staff regularly, because I like them and we have fun together. I'm not sure at this point it has impacted my teaching or my students learning. I just don't think we are there yet, I think we will get there but we just need to be patient and make sure you are focusing on the task at hand. I don't think yet (impact on students).

9. How do you think your perceptions of Professional Learning Communities have evolved throughout this first school year of implementation?
        • I think based on the training we had at the end of last school year. It made it seem like you do this and this and this and ta da, you get results and compare them. It's a lot more complicated than that. They maybe said that in the training. It has the potential to be helpful to make sure we are teaching what we need to be teaching and we will teach the best way we can so we will get those standards and teach those standards.

10. Anything else you want to share about this school year in regards to our department time?
        • I'm going to be sad next year when we don't have our whole staff anymore. I like our department time, I know not everyone does, but I really do and I think all of us really do.

Appendix E: Paul Yang Interview Transcriptions

Interview 1

1. What is your name?
   - Paul Yang (pseudonym)

2. How long have you been a teacher and specifically how long have you been a teacher at Marion?
   - 33 years teaching, 18 years at Marion

3. What subjects are you currently teaching and what have you taught in the past?
   - I've taught all of the sciences except Chemistry and Physics. Here I've taught the general sciences matter, motion, energy, earth when we had it. All the biologys, botany, human, biology, and field biology.

4. In your own words, how would you define a Professional Learning Community (PLC)?
   - Being all new to me, I would say it is more or less communication between teachers. Getting together and seeing if you can right the ship if you have any wrong.

5. In what ways do you think PLCs are similar and different from educational initiatives of the past?
   - I think education as a whole has a tendency to make circles. So they bring out an idea and beat it into the ground. Then, start something new but call it something different. I think this is definitely different in that they are letting teachers do more together and discuss things together. I think if you are brought up in it, it is fantastic, but if you are not it is a struggle. Because it is all just new. If you take it slow, it will be frustrated. But I think it is definitely a teeter totter of frustration.
   - Probably the crossover when they used to call everything objectives, and then I can statement, and then the PLC. You want to find the things you think are most important and teach them well, rather than just teach a lot of things.

6. How will we know if our PLC is productive?
   - I think we already know it is going to be productive because we are communicating together. Do I see scores on ACT and class scores going up dramatically? No, I don't. I think it will be great that we can get together and get rid of things that don't work and bring in things you've never tried before.

7. What do you see as the biggest obstacles to PLC implementation?
   - I think the biggest thing is getting the older teachers that get frustrated from putting their heals down and not doing what they are supposed to be doing. I think that is always the case. Something new is always hard to break in. Other than that, just going too fast and getting frustrated.

8. What reservations, if any, do you have about forming professional learning communities?
   - I don't have any. Just, like I've said, frustration of going too fast.

9. What do you envision to be the biggest impact of the PLC in terms of your teaching and student learning?
   - I think it will emphasize what you do well. It will be a good pat on the back that maybe teachers weren't getting before. Maybe you were doing this, and keep doing this. Just getting together and communicating with everyone in your department on a biweekly basis is always good. Then, if you are frustrated or if you are concerned or happy about something, you can throw it out to the group.

10. Is there any specific area of instruction you would like to see improved through your PLC work?
   - Umm, I just think the whole raising questions just evolves as you teach. I think that will be a huge part of it. I find myself even now, reaching out and calling on kids and asking them to generate questions to clarify. Trying to dig deeper and get it out of them rather than just get the easy answer.

11. What do you think are the biggest possible impacts of PLC implementation for our department, our school, and our district?
   - I think that is to be seen because every subject is going to be different. There are so many avenues that different departments will take that could be good or bad on how they come together and discuss. I see a few departments who will make it a pain in the butt.

12. What steps do you see us taking through this first year of PLC implementation?
   - I think vocab and everyone on the same page with simplistic unwrapping terms. I am one that is definitely an A personality, I want to know it, I want to know it now, and I want to implement it. When you don't understand it, you get very angry and frustrated. I think getting everyone on the same page, I understand where they want to go but I don't see the whole path yet.

1. In your own words, how would you define a Professional Learning Community (PLC)?
    *   Where your colleagues get together, meet, collaborate is the new word, and bounce new ideas off, and bounce old ideas off to improve or give some new appeal to that unit

2. How do you think your understanding of the PLC has changed?
    *   No, because I think we are so intertwined with our standards that we haven't really gotten to what a PLC is

3. How would you describe the steps we have gone through with our PLC so far this year, and where do you see us going through the rest of the school year?
    *   Hopefully we start to figure out a clear-cut path, where we can separate what we are doing with our standards and NGSS with PLC. Actually, take time to help each other out in the classroom, rather than just focusing on the standards.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?
    *   Oh, I think we are trying to communicate and trying to get into the PLC more, but we feel pressure to get that other done so much that its lost. But I think it is going to be great, the more you can talk to your colleagues the better off you are going to be. Right, we aren't wasting time, we are always on task and doing something we should be doing, just not the definition of the PLC yet.

5. In what ways has the professional learning community been what you expected and in what was has it differed from your expectations?
    *   Same thing, we all have expectations that we want to do more collaboration

6. To this point so far, do you think the PLC has had any impact on your teaching?
    *   No, no I don't. Well, I shouldn't say that. What we did yesterday at our meeting, we got one of our colleagues on board, more than he has ever been. What is strange is I have a unit all set to go, it got nixed, and then yesterday everything changed because it became more of a collaboration. I think there is good and bad, but we are heading in the right direction

7. In your opinion, is this PLC something that our school can sustain and maintain?
    *   Definitely, but like we said, there needs to be some criteria. It doesn't need to be written, too many things are tried to shove down our throat rather than we as a staff can say we need this time to do

> this and this time to do this, I think we can do it, we just need to clarify

8. Knowing what we know now, what would you want to see done differently to start the year?
   - Separate those two (standards and PLC) and give that clear-cut path. When you are PLC you're doing this, when you're doing standards you're doing this.

9. In addition to our first year of PLC implementation, as a district we are also seeing our first year of implementation of the TLC grant and the changing of the Iowa Core Science to include the Next Generation Science Standards (NGSS).
   - Do you think these three things complement each other?
   - Both (complicate and complement), depending on the situation, I think it has complicated it the sense that there is a push that they do their job, rather that they involve themselves in the PLC rather than the implementation in some of the rules

10. Has the PLC helped with your understanding of the NGSS?
    - Yes, because that has been our focus. Even though it is as clear as mud, at least there is some sort of awareness of this is what it is, this is where we need to go. The better way to say it, it is not concrete which it sounded like in the beginning. Start to implement, look at your teaching, the way your teaching, the way you're interacting with students, and see if you can implement all of that stuff. Most of us do that, but I do think it would be nice to have people come in and say you are doing this, even if you don't know where it fits.

11. Do you think the district has supported us in our PLC formation?
    - Yes, in terms of the time we've had during the day. It's not all working out, because of the logistics with everything else, but I think if they do that and they have morning or after school it will become clearer

12. What recommendations would you make to a school district that was thinking about starting to from PLCs?
    - Make it less pressure packed and less about you need to get these key things done, make it more collaborate together and make everyone's teaching that much better for kids rather than implement this right now.

<u>Interview 3</u>

1. If your own words, how would you define a Professional Learning Community?
   - I would say getting together with colleagues to bunch new ideas off each other to try and take students to a new level

2. How do you think your understanding of the PLC has changed throughout this year?
   - I don't know that it has really changed. I know it is still evolving. We did so much with the new standards that we didn't do a whole lot with PLC.

3. How would you describe the steps we have gone through with our PLC this year, and where do you see us going into next school year?
   - I would say stepwise, my first thought it get it separated as quickly as possible. You need new ideas to bounce off each other but the standards should be at a different time. Process wise we jumbled it up too much there wasn't a clear definition.
   - I would say we spent a lot of time on standards, we talked through, but didn't do a whole lot of sharing of evaluations formative or summative.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?
   - I think our department has been very successful in understanding each other. We don't need a lot of boundaries, don't have a lot of fighting. We got a long with each other. If you did a have a disagreement you could talk about it and if you couldn't talk about it you could laugh your way through it.
   - Besides the separation, with newbies being new to the district you are going to have to build community again. There are 3 tight ones, but you'll have to build that community strong.

5. An important part of the PLC process is communicating effectively. Looking at the continuum, where do you think we fall on the idea that the school has established a clear purpose and priorities that have been effectively communicated.
   - Right at pre-initiating and initiating. I don't think we've implemented anything, unless you just throughout the term PLC. So initiating of PLC of what it is really going to do and become effective.

6. Respond to the following statements in regards to the MHS Science Department
    a. It is evident that learning for all is our core purpose
        • Yes, I think it is more in how all of us talk. All of us are on the same page, we love hearing what other teachers are doing and working to implement that in our classroom. It's not just sticking with what we are doing but trying to take kids to a new level you're doing that I want to try it too.
    b. We have a shared understanding of and commitment to the school we are attempting to create
        • I think we can take it to a new level with new people. You had resistance out of some people who dragged their feet, the others of us tried but
    c. We have made commitments to each other regarding how we must behave in order to achieve our shared vision
        • I don't know that we had to. We laid them out, but other departments probably needed it. We did more to joke around that really through the gauntlet down.
    d. We have articulated our long-term priorities, short-term targets, and timelines for achieving those targets
        • That's a big question. Short-term I'd agree with, we all knew what we wanted to accomplish. Long term I think it too cloudy. Everything is going to evolve, new elections. Education is all a big circle that we keep coming back to.

7. The first question in a PLC should be, "what do we want students to learn?" How would you describe the process we have gone through this year to try and address that?
    a. Looking at the continuum in front of you, in what state do you think we are currently at?
        • I would still say pre-initiating because it is a process. Yeah, then I'd take it a step up. We've discussed it to death, but no one is in agreement yet. We use the computerized curriculum methods. We went through that list and there are a lot of things that the standards think are important that we don't teach.

8. How do you think this year with our biweekly meetings have impacted you? Your students?

- I think it would have helped me more to talk through more PLC things than just the standards because I'm not much of a follow the standard type of person. I thought it was informative I think I learned a lot, I tried to buy into it but like I said, with the next group coming in being more closely raised on that will make a difference.
- I don't think I changed the way I taught. I'm very positive, I believe what I did in the classroom was very good so I don't think it affected me that much.

9. How do you think your perceptions of Professional Learning Communities have evolved throughout this first school year of implementation?

- I think if I was going to be here, it would be an easier step forward. Because we got a lot of bumps and hurdles out of the way. It's a work in progress. Just having the word out there and buying into it, it will help down the road.

10. Anything else you want to share about this school year in regards to our department time?

- Nope, we as a science department were fantastic.

Appendix F: Chris King Interview Transcriptions

Interview 1

1. What is your name?
    - Chris King (pseudonym)

2. How long have you been a teacher and specifically how long have you been a teacher at Marion?
    - 36th year for both

3. What subjects are you currently teaching and what have you taught in the past?
    - I've taught general science to 9th grade and have taught all the biologys. Sometimes they are all together and called biology as a yearlong class, and now they are broken down into three different semesters. All life sciences.

4. In your own words, how would you define a Professional Learning Community (PLC)?
    - It's a mindset to me, a mindset a way of thinking together. Focus on what the students are accomplishing rather than always what the teachers are doing. And, it's a scheduled event that is regularly scheduled so it may have some momentum. Versus something you get together at the end of the year and then forget about. It has to be regular enough that you keep your momentum.

5. In what ways do you think PLCs are similar and different from educational initiatives of the past?
    - Well the teachers are it's not as directed. The teachers are defining what it is. And the process is directed, but how we get there and what we choose as being important or not important and the skill set of how we get the students to get there is totally teacher based. And so you have ownership of that process. It's not flavor of the month like a lot of professional development. It's an ongoing process with support so it's different. Different than anything I've ever seen.
    - It's kind of similar to different curriculum processes, when we got ready for curriculum rewrite. When you examine what you are teaching and what the students are learning. But that would be shot in a one-shot deal. So the formative part hasn't been there at all. It would be something that cycled through and you looked at up close every few years.

6. How will we know if our PLC is productive?
    - Good Question. We are going to see improvement slowly with our students because it is a gradual process. But I think it is just going to be the way we feel we are working. You feel successful, when you see the students being successful. And we have an avenue to keep improving in a regularly scheduled way. I just think it is a way of doing business. I think it will just be our perceptions.

7. What do you see as the biggest obstacles to PLC implementation?
    - It's really detailed. It's so detailed. You go to the training and then there is all the different ways to unwrap the standards. If there were a few more compact ways, succinct ways to get there. Then people could wrap their mind around rather than having to refer back to the literature. That would be really good. Maybe it will come back when we have practiced it. So getting use to the process, and stream lining the process of how we are thinking about it so we don't get slowed down with the process to the point where we lose momentum.

8. What reservations, if any, do you have about forming professional learning communities?
    - No, other than a little fear. Because you are sharing in a way that teachers haven't in the past. How are my kids doing, and how are your kids doing? And what are we doing different. When you put your kids scores there and you lay them next to someone else's scores. There is the fear of examining your curriculum. Am I actually teaching to all these standards. The accountability piece is going to be scary until people get used to it.

9. What do you envision to be the biggest impact of the PLC in terms of your teaching and student learning?
    - It is scheduled improvement that is a part of our system. So its systematic improvement rather than someone feeling like they want to get better. It is built in to our system so we are all doing it all the time, instead of some good ones doing it when they can because the rest of us are dancing as fast as they can checking papers and things.

10. Is there any specific area of instruction you would like to see improved through your PLC work?
    - Yeah, the science and engineering practices is something I know, wanting to be an efficient teaching I know that certain processes take more time and the tradeoff between knowledge level things that I can give efficiently versus using science and engineering practices to make sure that students are engaged in that process of science. I know that is an area I need to improve on.

11. What do you think are the biggest possible impacts of PLC implementation for our department, our school, and our district?

- Well when the whole district is doing something systematically in a positive way, organized, I think you build a lot of synergy within the organization so the energy can feed in to something bigger than just the person.

12. What steps do you see us taking through this first year of PLC implementation?

- At first, I thought we'd be going a lot faster. We are going a lot of unwrapping. We need to get to that essence. I saw a lot of good things in our last meeting when we got to the verbs of students needing to be able to do this, to know that we saw that. Then we'll be able to develop those assessments that go along with that.

Interview 2

1. In your own words, how would you define a Professional Learning Community (PLC)?

- People that have a common subject material, or common practices they are trying to teach so they share the best skills in order to get there

2. How do you think your understanding of the PLC has changed?

- Ours is still evolving, because we've got a single definition, but it will continue to evolve into all the things our department needs to be and not totally focused on an individual standard

3. How would you describe the steps we have gone through with our PLC so far this year, and where do you see us going through the rest of the school year?

- Bogged down a little bit at the start, but I think as we had dialogue we found what our most important conversations needed to be and that's what we've done
- I think we will decide at what level we will be integrating. I think the state's definition and our districts view of them, and out departments view continues to evolve. Are we going to go to standards based grading, or is it just looking at the standards and grading them differently? What does our grade reporting system look like in the future? As those evolve, so will our conversations.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?
   - Number one, we will continue to get better because of open dialogue. We are fine talking to each other; we don't have any hidden agendas that I've been able to discover. I think we'll continue to grow as a learning community as long as we keep that open dialogue
   - Learning to work together in that way is a success, we've always had conversations, but I think eventually we'll get to the point where the conversation will make a difference in the classroom the next day. Where it's a thinking and philosophy processes, we adapt curriculum in a certain way. I think we'll share more in the future and share assessments and start sharing direct skills even faster, I think it will continue to accelerate.

5. In what ways has the professional learning community been what you expected and in what was has it differed from your expectations?
   - It was what I expected, I knew it wouldn't be this clean jump start. Between getting these new science standards and the PLC at the same time it was a lot to mesh together and make workable. IT will get better faster.

6. To this point so far, do you think the PLC has had any impact on your teaching?
   - I know I'm thinking about my instruction a lot differently. I think it will continue to evolve what I teach and how I teach. It hasn't made a huge impact yet, but I think it will.

7. In your opinion, is this PLC something that our school can sustain and maintain?
   - Yes, but it will come down to administrative commitment. Right now, we have money and schedule to make it happen, but if those two disappear a lot of the work will. The ones that really see the benefit will continue, but the ones that don't will see it fall away. Also, new teachers will need to be indoctrinated to the culture.

8. Knowing what we know now, what would you want to see done differently to start the year?
   - No, I knew we would struggle to find our way. It didn't matter if it was before school, or in between. Maybe there were some expectations coming toward us that were a little high, or departments that had gone a little further because they didn't just get new standards so maybe we felt like we needed to go a little faster. As individuals, we make quick decisions all the time, but as a group the decisions will take longer but then they will be better in the long run.

9. In addition to our first year of PLC implementation, as a district we are also seeing our first year of implementation of the TLC grant and the changing of the Iowa Core Science to include the Next Generation Science Standards (NGSS).

    a. Do you think these three things complement each other?

- It made it more challenging to start, but at the same time they all work together. The grants money and organization made the PLC work and the fact that we have something new to talk about curriculum wise gave us something to work at so it doesn't seem like we are meeting too often. Even though it is time we used to spend doing something else, we have things to talk about

10. Has the PLC helped with your understanding of the NGSS?

- Oh yes, yes. Absolutely. The sharing. Some of us wouldn't have had the resources to know where to look at certain things. All of our understandings combined, the new standards are very complicated. Without all of us looking at and talking about the insight of others outside of our district, we wouldn't be where we are at all.

11. Do you think the district has supported us in our PLC formation?

- Absolutely, yes they have. They've given us common planning time so we have time built in to our work schedule to really get at it. We also have the system where all the different levels of the PLC are meeting at the support level.

12. What recommendations would you make to a school district that was thinking about starting to from PLCs?

- Build the time structure without just adding to teacher's duties. Either block out new time, or take something off their plate. In the past, it has just been add one more thing, add one more thing. People can't just keep doing more and more.

Interview 3

1. If your own words, how would you define a Professional Learning Community?

- Colleagues working together for a common, on a common curriculum

2. How do you think your understanding of the PLC has changed throughout this year?

   - We're a little unique in that we are a bunch of singles, or there is maybe one or two teaching a single class. I'm maybe not as on board as I was from the start when we looked at the process and making sure we have common assessments. Looking through at which teacher is doing a certain style or certain practice, I just think the sample size is too small to say it was because of this. It's no more than intuition does as a teacher when you do something and you think it is successful. I don't think looking at this class size and looking at how they compared to another class is necessarily useful data.

3. How would you describe the steps we have gone through with our PLC this year, and where do you see us going into next school year?

   - We spent a lot of time looking at the NGSS and that was important I think. So we didn't get to the common assessments as much, because we were still going through the curriculum and looking at what we are doing and were doing is matching up to the NGSS which we are saying should be the best practice, best curriculum for our students. We also looked at that and said okay what is our timeline, we know there is going to be holes in knowledge base if that isn't happening all the way through our system vertically. It will be a big transition.

4. What parts of the PLC process do you think we have succeeded in and what parts do you think we need to continue to work on?

   - Collegiality has been excellent. We have been sharing and talking on a more regular basis than ever before. I think it has made us stronger and make us have more common, as we are evolving together. It was time well spent.
   - Some of our agendas were forced upon us because things happen during the year and principals want stuff done. We also have to do schedules, and things. I see it evolving into our department and jobs, practices, or whatever needs to be done with a focus on curriculum and student learning.

5. An important part of the PLC process is communicating effectively. Looking at the continuum, where do you think we fall on the idea that the school has established a clear purpose and priorities that have been effectively communicated.

- Some of the descriptors. In implementing, but some participants are only participating begrudgingly so I think we are past that but that is like the 4th one. I think we are implementing. Most people know why we are doing it, and why it is important and want to advance our instruction. Most people are self-reflective enough to want to make that change.

6. Respond to the following statements in regards to the MHS Science Department

   a. It is evident that learning for all is our core purpose
      - Yeah, everyone is trying to teach everybody. We're not set to just do things one way. We are trying to adapt to what students need.
   b. We have a shared understanding of and commitment to the school we are attempting to create
      - Yeah, a lot of our discussions have revolved around moving our curriculum a certain direction
   c. We have made commitments to each other regarding how we must behave in order to achieve our shared vision
      - We're behaving well
   d. We have articulated our long-term priorities, short-term targets, and timelines for achieving those targets
      - We'll have to revisit those. We'll want to reestablish those now that we have been through this, and realizing what hijackings happen along the way. You can't spend all the time on the curriculum because other things come up too.

7. The first question in a PLC should be, "what do we want students to learn?" How would you describe the process we have gone through this year to try and address that?
   a. Looking at the continuum in front of you, in what state do you think we are currently at?
      - I think we're on developing. Looking at our testing to see how it aligns with our curriculum. We are adjusting curriculum and come up with new curriculum. Adapt to more closely adapt NGSS.

8. How do you think this year with our biweekly meetings have impacted you? Your students?

- I think it is great we've been able to get together and reflect on our practice. You grow faster as an instructor that way. Well you get good ideas form sharing with everyone. The best ideas come to the top and spread faster.

9. How do you think your perceptions of Professional Learning Communities have evolved throughout this first school year of implementation?

- Well I knew we were going to have trouble doing it the way we practice, lining up students and looking at their common assessments and how they scored and determine whose practice was the best based on that. It is really hard to not think your practice is the best and continue to do it and be a scientist. Student teachers are going to adapt from one class to another, they aren't going to wait until we are able to get together to determine what they could do different. The science behind the techniques we were first presented with, with the small sample size and being more responsive to student needs, makes it challenging to follow the model exactly but I still think there is a PLC, it just might not be that data analysis style daily data analysis. I think it is more long term and exit kind of tests and examination rather than daily assessments.

10. Anything else you want to share about this school year in regards to our department time?

- No, I think it has been good stuff.