How to Create a Professional Learning Community

Make your experience worthwhile with these guidelines.

By Tamara Holmlund Nelson, Linda LeBard, and Charlotte Waters

Devoting time to a professional learning community (PLC) can be frustrating or rewarding. We have experienced both of these outcomes and can share processes that may help make your PLC one that enriches your professional growth and improves your students' learning. After five years of participating in a high school level PLC and studying science and mathematics PLCs in middle and high school, we appreciate the challenges presented when teachers are informed "this year we are all going to be in PLCs!" When we talk about our work at NSTA conferences, we hear from teachers and professional development providers across all grades who wonder what they are supposed to do in these hypothetically collaborative groups. Based on our experiences, we have identified three major aspects to making PLC work productive, effective, and professionally stimulating: (a) Use a collaborative inquiry cycle to guide the work, (b) learn how to have deep conversations, and (c) take an improving approach to looking at student work.

The Inquiry Cycle

The *inquiry cycle* is a process of investigating a problem of practice or a teaching challenge that needs attention and improvement. It is an important part of making a PLC successful. A key element of this inquiry cycle is looking at student work to better understand student thinking and change instruction accordingly. There are three main phases to the inquiry cycle we use in our collaborative work: focus, implement, and analyze (Figure 1, p. 38). Following this inquiry cycle keeps us moving forward in our work, so it is important not to leave out any of the phases. Conducting the inquiry cycle is neither a one-way nor a sequential process. For example, while teachers talk about goals and values at the beginning of the cycle, a common vision becomes clearer during the analysis phase. Also, once a focus is determined, the implementation and analysis phases can happen in small cycles throughout one school year or across multiple years. Although the inquiry cycle might look sequential, there are times when teachers will want to loop back in the cycle to revisit ideas or re-implement an instructional activity in a modified form.

Focus the Inquiry

Collaborative inquiry involves identifying and agreeing on one problem or area of student need. Finding this focus can be challenging and groups often get stuck. There are so many classroom issues to address that it can be difficult to focus on just one. Also, people have different opinions on what is most pressing and might worry that the selected focus will be a waste of time. Using a process that allows each person to explain what she or he is most

interested in and why can help (see *Choosing a Question* protocol, Internet Resources). We know groups that have successfully used a modified "final word" protocol to make their decision on an area of focus. Their modification began with two to three minutes to think and record as much detail as possible about the focus each would like to pursue. Then, each person in turn took two minutes to present her or his idea, and every group member had one minute to question the speaker's idea or build on it. The original speaker then had one minute to make a final statement. After all presented, each person advocated for one of the ideas presented (her own or another's), and the group used a "fist of five" voting method (using fingers to indicate a level of support from "will sabotage" through "can live with" to "fully support") to identify which idea had the most support.

Before trying to agree on a focus, it helps to first examine students' successes and failures on previous assessments, look carefully at the big ideas or standards, and draw on past experiences with specific concepts. These conversations provide opportunities for people to express and explore their values about the most important experiences for students and their expectations about student learning. After identifying an area of focus, doing a curriculum topic study (Keeley 2005) together is one way to build a common understanding about a unifying concept, determine the range of expectations for student understanding at different grade levels, and explore students' misconceptions common to that concept.

We developed our inquiry focus and question—how to improve students' written scientific conclusions—based on students' classroom work and our standards-based state test results. We also did research on scientific conclusions and discussed our beliefs about what makes a good conclusion. From this, we identified common student errors, such as not using evidence to support a claim or omitting units of measure. This work took us about three months (five PLC meetings). We were then ready to plan lessons to address problems in students' scientific conclusions and collect student work to assess the effect of our targeted instruction.

The conversations in the focus phase will differ depending on whether group members all teach the same subject or teach different grades and subjects. Our PLC has experienced both conditions. Other PLCs we have worked with ranged in composition from all sixth-grade science teachers to science and mathematics teachers across grades 6–12. It is much easier to select an inquiry focus when everyone teaches the same content, but this should not prevent a PLC from moving forward. We suggest that groups first make sure the different areas they are exploring for an inquiry focus are relevant to each group member and are rich enough to sustain inquiry over time. For example, focusing on magnets is not relevant to teachers who do not teach this; nor is magnets a unifying concept that will sustain an in-depth investigation into students' ideas. However, a focus

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on student understandings of the properties of Earth materials could apply across grade levels.

Implement Common Actions and Collect Data

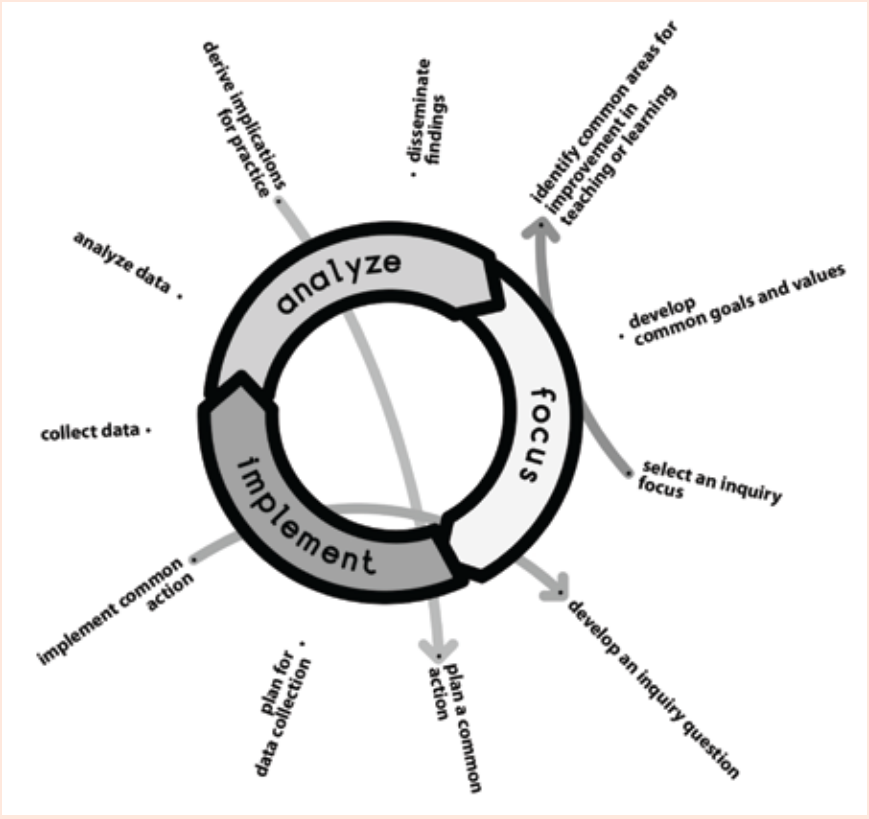
The next phase in the cycle is to address the inquiry question by implementing specific activities in classrooms and collecting evidence of student learning related to those activities. For example, teachers might want to develop (or find) and use a diagnostic assessment that elicits students' ideas prior to teaching a specific unit. Or, aware that students always struggle with a particular series of lessons from a science kit, the PLC members might revise and teach these lessons. Video recordings made during the lesson, collecting and reviewing students' science notebooks, or using and collectively reviewing formative assessments can provide evidence of the effect of the lesson on student thinking. If all PLC members teach the same subject, then everyone can implement a common lesson or strategy. If not, members can serve as critical friends in reviewing each other's implementations.

In our PLC, we implemented the use of a graphic organizer to support students' conclusion writing. Each teacher used this with students multiple times. We conducted minicycles (4–6 weeks) in which students wrote conclusions. We collected these and scored them based on agreed-upon qualities. We then explored areas in which students did and did not meet our expectations. This became a two-year process as we learned more about how to teach conclusion writing and identified more specific problems students had.

In elementary or small schools, where few people teach the same curriculum, the instructional strategies can be tailored to each teacher's classroom (e.g., a focus on students' use of scientific language applies across grade levels). Common strategies to build students' understandings of key scientific terms (e.g., *prediction, evidence, system*) can be implemented at each grade level. Or, teachers at different grades can develop different yet related implementation activities. Discussion of each teacher's strategies and student outcomes can alternate across PLC meetings.

Figure 1.

The inquiry cycle.



Analyze Student Thinking

The power of collaborative inquiry lays in bringing student work to the group for shared analysis. Yet, this can be a new and uncomfortable experience. In some groups, a teacher leader may need to volunteer her or his students' work to model a nonthreatening process. Again, protocols, probing questions, and collaborative norms can facilitate the process and support deep conversations that go beyond sharing statistical results. Although it might seem artificial at first, a set of probing questions can be posted for PLC members to use. Questions that take conversations to a deeper level might include, "What specific response from this student makes you say she understands?" or "How does the range of student conclusions help you think about the expectations you had for student learning from this lesson?" Having agreed-upon norms for these conversations helps. For example, the group might talk about how it feels to use these probing questions and find that people feel like they are being judged rather than supported. A review of collaborative norms such as *pursuing advocacy or inquiry* or *paying attention to self and others* (Garmston and Wellman 1999) can help the group build trust in the process.

Teacher learning is the result of collaboratively analyzing student thinking. For example, teachers might discover from students' responses that the questions they ask confuse students, and therefore do not fully elicit what students really know. Based on this finding, the teachers can develop and practice better questions. Or, as children seldom say exactly what a teacher has in mind, looking at a variety of students' work helps teachers explore the multiple forms of understanding across their classes.

Note that analysis of student thinking occurs multiple times in the inquiry cycle and informs a next step. In our inquiry into scientific conclusion writing, we examined previous students' accomplishments in this area on the state exam. This, along with paying more attention to students' misconceptions, helped us develop our learning expectations, a baseline assessment, and a graphic organizer. We implemented this organizer as an instructional strategy and collected the resulting student work. We used this work to consider whether the graphic organizer supported student growth. In the spring we gave students the same assessment used in the fall. This allowed us to identify specific areas in which students improved and in which they still made mistakes. From this, we decided to continue our work on conclusion writing for another year. During this second year on conclusion writing, we saw that students had a specific problem—interpreting data tables. This led us to a new inquiry focus for our third year together.

Deep Conversations

It can be difficult to have substantial conversations about teaching and learning because the topics can feel personal. Revealing to colleagues that your students did not learn as much as you hoped can be a humbling admission. Thus, we suggest that groups begin these difficult conversations with questions such as: What do students generally understand, year after year? Where do they typically underperform? Are there areas in which top students always do well and the rest of the class never reaches a satisfactory understanding? These types of questions focus attention on student learning and learning goals. Building collaborative norms such as paraphrasing and probing (Garmston and Wellman 1999) and using predetermined probing questions and protocols can help teachers feel safe in asking and responding honestly to these types of questions.

We learned that when we bring student work to our meetings and share it with everyone, our conversations are more substantial. With the work present, we can use it as evidence to support our claims about what children do or do not understand. Authentic questions about teaching and learning come up and can be explored. We can look for variations in students' ideas in order to make our subsequent instruction more targeted to their specific needs. When we don't have student work to show, we talk in more general ways about learning, or shift to talking about the problems or successes of a lesson disconnected from what the students learned from it.

Figure 2.

Characteristics of PLCs.

Professional Learning Communities are characterized by:

- Time, resources, and intellectual support for teachers' *consistent* opportunities to come together as learners to engage in collaborative inquiry processes;
- Collaborative environments that foster interdependence, build trust, and support risk-taking amongst group members;
- Conversations that are focused, reflective, inquiry-based, action-oriented, and directly related to teachers' work and students' learning;
- Conversations that support the development of shared values and a shared vision for all students' learning;
- Collaborative processes centered around closely examining evidence about student learning and making links across teaching, learning goals, and student thinking;
- Strong leadership that is distributed across teachers and school administrators;
- New understandings about teaching, learners, learning, and curriculum; and,
- Meaningful connections to other school and district initiatives.

Improving Approach

Another important aspect of PLC work is the view teachers take toward using student work. We designate these views as "improving" or "proving" approaches (Deuel et al. 2009). A *proving* approach is when teachers predominantly talk about student achievement measures, such as percentages of correct answers, assessment scores, or whether students "got it" or "didn't get it." This view toward analyzing student work does little to help teachers identify the various ideas children have constructed about a scientific concept or how a specific lesson affected students' thinking. It can lead to generalizations such as "my kids understand because 80% got the right answer." This kind of analysis focuses more on the successes or failures of past instruction than on possible next steps to address children's current and specific needs. In contrast, an *improving* approach is in place when teachers hold a view that teaching can always be improved in relation to students' conceptual understandings. Teachers examine student

work or classroom talk to identify students' misconceptions (initial or naïve understandings of a concept) and examine these in relation to learning expectations. Deeper conversations and more nuanced understandings result when teachers ask questions like, "What do we mean when we say a student 'got it'?" or "What do we see as the difference in student understanding between a child who scored a 4 and a child who scored a 3?" With an improving approach, the analysis of student work is a starting point for further inquiry and a consideration of the links between instruction, learning goals, and students' thinking.

We find we have much deeper conversations when we consciously try to use an improving approach. For example, when we look at students' responses on preassessments, we often make wondering statements such as "Do you think they might be getting confused by …" or "What are we really looking for with this question?" Posing tentative questions about learning, teaching, and expectations rather than making declarative statements about student achievement changes the nature of our work together. We also pay attention to what we talk about, why we are collecting specific types of student work, and how we are making sense of student thinking. This has been important to improving our teaching and our students' learning.

Why Participate in a PLC?

We know it is not easy to do collaborative inquiry that is professionally rewarding and affects student learning, but we think it is worth the effort. It can feel frustrating when it takes time to identify an inquiry focus or when people are reluctant to bring student work to the group for analysis. Administrators may press for measurable results before the group feels ready to identify connections between instruction and learning.

We have learned that it takes time, resources, leadership, administrative support, and attention to our PLC's practices and attitudes to achieve the professional learning and effect we envisioned (Figure 2, p. 39). There are processes, such as the inquiry cycle, that can support a group's progress. There are resources, such as dialogue protocols and collaborative norms, which can support the group's development as an inquiry-based community. A group can conscientiously work to develop an approach toward examining student work that helps teachers improve their teaching and students' learning (e.g., Critical Friends Group; see National School Reform Faculty FAQ under Internet Resources). This potential for improving teaching and affecting student learning makes the time and effort devoted to collaborative inquiry in PLCs worthwhile. ■

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References

Deuel, A.F., T.H. Nelson, D. Slavit, and A. Kennedy. 2009. Looking at student work. *Educational Leadership* 67 (3): 60–72.

Garmston, R.J., and B.M. Wellman. 1999. *The adaptive school: A sourcebook for developing collaborative groups*. Norwood, MA: Christopher-Gordon Publishers.

Keeley, P. 2005. *Science curriculum topic study*. Thousand Oaks, CA: Corwin Press.

Internet Resources

All Things PLC
www.allthingsplc.info/articles/articles.php

Choosing a Question Protocol
www.nsrfharmony.org/protocol/doc/choosing_question.pdf

National School Reform Faculty FAQ
www.nsrfharmony.org/faq.html

North Central Regional Educational Laboratory: Professional Learning Community
www.ncrel.org/sdrs/areas/issues/content/currclum/cu3lk22.htm

Professional Learning Communities: What Are They and Why Are They Important?
www.sedl.org/change/issues/issues61/attributes.html

Connecting to the Standards

This article relates to the following *National Science Education Standards* (NRC 1996):

Professional Development Standards

Standard B:

Professional development for teachers of science requires integrating knowledge of science, learning, pedagogy, and students; it also requires applying that knowledge to science teaching.

Standard C:

Professional development for teachers of science requires building understanding and ability for lifelong learning.

National Research Council (NRC). 1996. *National science education standards*. Washington, DC: National Academies Press.