LASER FOCUS

ON CONTENT STRENGTHENS TEACHER TEAMS

By David Slavit, Tamara Holmlund Nelson, and Anne Kennedy

As Gene Henderson loaded his sixth binder onto the top of his growing stack, his face could no longer be seen. He shouted, "And now I'm in prison!" In a powerful presentation to his school, Henderson was referring to numerous professional development events that had left him with nothing but a binder. He was also joking about his current involvement in PRiSSM, the Partnership for Reform in Secondary Science and Mathematics, a three-year project that targeted mathematics and science teachers in middle and high schools from six districts in southwest Washington. Like many other teachers, Henderson noted that PRiSSM was "the most powerful professional learning experience I have ever had."

Consistent with NSDC (2009) recommendations for professional development, PRiSSM involved collaborative teacher teams in reflecting on and discussing content goals and student learning data to improve practice (Horn & Little, 2010; Kazemi & Franke, 2004). Based on our ongoing work with PRiSSM teachers and administrators, we have identified five important considerations essential to maximizing the potential of teacher collaborations around content-specific learning objectives. The challenges inherent in collaborative, content-specific professional learning are greater than we first recognized, and these new understandings contribute to our ongoing support of professional learning communities.

PRISSM: INQUIRY-BASED AND CONTENT-SPECIFIC

PRiSSM was a three-year project focused on middle and high school mathematics and science teachers. (For detailed information, go to http://research.vancouver.wsu.edu/prissm). The project was designed to develop teachers as leaders of content-based professional learning communities. In Year 1, PRiSSM provided support for 45 teacher

leaders in 22 schools (one mathematics and one science teacher per school) focused on student-centered instruction, research skills, and group facilitation. Cross-content and cross-school learning communities, in groups of four or six, involved high school teachers collaborating with teachers from feeder middle schools. Facilitators attended monthly meetings during the school year and supported each teacher group's creation of a content-specific inquiry focus, research design, and group discussions. The project expanded to 35 communities in Years 2 and 3 when most of the teacher leaders in each school formed single-disciplined (mathematics or science) communities with their building-based content colleagues.

IMPLEMENTING AND SUPPORTING PROFESSIONAL LEARNING COMMUNITIES

Based on the progress and struggles PRiSSM teachers had during and after the project, we have identified five important considerations for enacting and supporting content-specific learning community work. Some of these were incorporated into the original PRiSSM professional development model and proved important for teachers' progress. Others were missing, and we subsequently introduced them to help teachers move forward in their work.

1. Teacher-defined inquiry focus

Teachers reported that what made PRiSSM powerful was the freedom to conduct classroom-based research that addressed students' needs. Each team defined its own questions and methods of inquiry, and project support was devoted to teachers' efforts to develop and investigate these questions. Support included summer institutes focused on collaboration and uses of student learning data, job-embedded learning community time, and ongoing facilitation of monthly community meetings.

Allowing teachers to focus and design their own inquiry increased motivation and spurred greater persistence in investigating problems of practice. The work was personal, real, and grounded in students' mathematical or scientific

learning experiences. Teachers relished the opportunity to address their immediate concerns, and the project leadership team worked hard, with mixed success, at identifying and garnering needed supports. In many cases, this led to improvements in student learning. In one professional learning community, state achievement scores in science increased by almost 20% in one year, buoying the teachers' and administrators' confidence and pride in their work.

2. Principal involvement

Principals were involved in summer institutes, and the facilitators worked with administrators during the school year to ensure that the PRiSSM learning community work was not an add-on. The facilitators attempted to match the communities' work to existing school initiatives and improvement plans. In some cases, this worked well. Teachers' interests matched the school's, or they were able to adapt school initiatives into their own work. In other cases, teachers felt that their work was being compromised and pulled in a direction they found problematic or peripheral to their own interests. For example, one group of teachers felt a districtwide reading initiative began to dominate their collaboration time and overshadow critical issues in their classrooms. Teachers and administrators had a facilitated conversation where they discussed their goals and interests and negotiated a reasonable solution. Building coherence across initiatives and protecting teacher collaboration time is critical to this work, and the teachers' work was able to continue down a path that everyone found acceptable. Some principals insulated their teachers from school and district mandates when they saw the teachers' work as potentially powerful, while other learning communities found ways to insulate themselves. In either case, a teachers' and principal's ability or inability to articulate his or her vision and manage conflicting interests were key factors in the level of teacher buy-in and maintaining a content-specific inquiry focus.

Principals were also part of the PRiSSM project leadership team, which planned and oversaw all activities. In fact, the leadership team made the decision to form its own pro-

Each team defined its own questions and methods of inquiry.

Considerations for content-specific professional learning community work

1 Teachers should define their own inquiry focus and methods, and facilitators should help them effectively undertake this work and connect it to school/district initiatives.

2 Principals should not just be aware of teacher needs, but should be involved and flexibly attentive to teacher needs.

3 Single-disciplined professional learning communities generate richer content-specific inquiry foci and discussion than do cross-disciplinary teams.

4 Professional learning community work is hard, and it is important to support teachers in developing research skills and ways to discuss student data and learning goals around specific content.

5 Teacher leaders should be, or eventually become, community facilitators.

fessional learning community in order to better understand the context of teachers' work. The team devoted half of its meeting time to project oversight and half to its own learning, which was focused by the question "How can we foster and sustain a culture of collaborative inquiry?" This allowed for a better understanding of how to support the teacher groups and to experience, firsthand, the intricacies, challenges, and benefits of work of this kind (Nelson, Slavit, Perkins, & Hathorn, 2008). Further, each of the above initiatives influenced some PRiSSM partners to develop districtwide professional learning communities for all school principals, adding an important layer of support for the teachers' work.

3. Benefits of single-disciplined learning communities

In addition to developing facilitation and leadership skills, mathematics and science teachers worked together in Year 1 on problems of practice. The cross-content focus better connected building colleagues across departments, horizontally aligned curriculum, and allowed the professional learning community work to have a greater schoolwide impact. However, the cross-content work also diffused the creation and discussion of content-specific learning goals to more general foci, such as student engagement and classroom communication. By far, the richest content-specific work occurred in the final two years, when the professional learning communities were composed entirely of mathematics or science teachers. Learning goals became more

content-focused, common assessments and teaching actions were more frequent, and analysis of shared student learning data became more common.
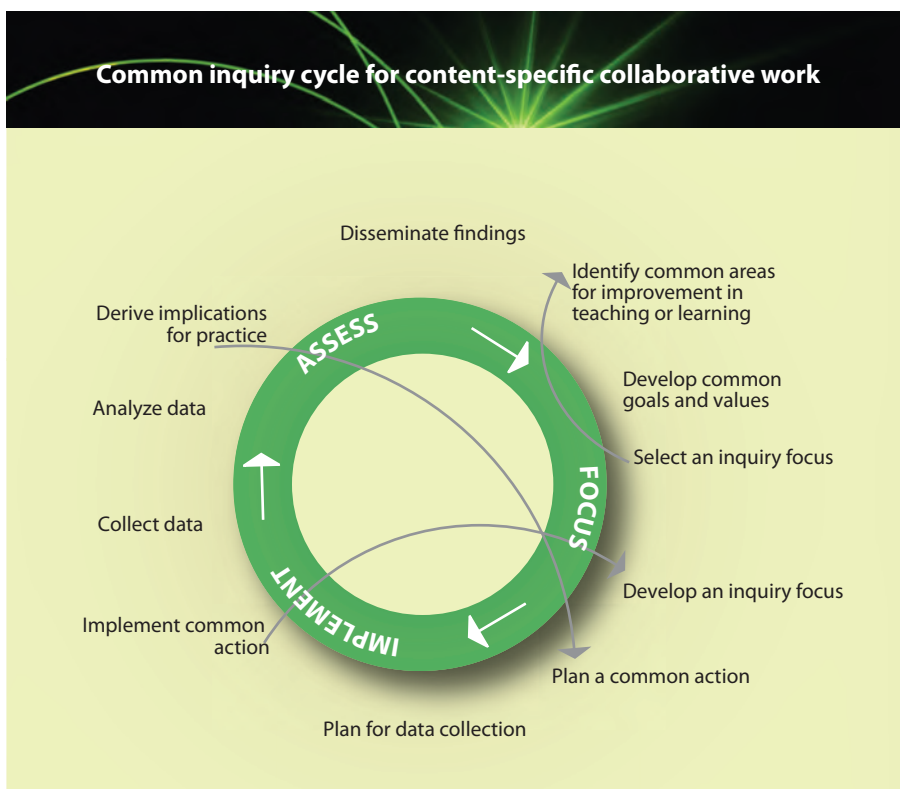
4. Supporting research skills and content-specific discussions about student learning data

The figure below illustrates that most groups took a path of inquiry that consisted of three interdependent activities. These involved initial planning, a collaborative action (such as a common lesson), and a period of assessment (such as looking at student work). However, as the arrows suggest, most groups did not linearly follow this path, but instead doubled back during periods of readjustment. Not only did this provide teachers with feedback for making changes to the inquiry focus and plan, it allowed them to collect and analyze student learning data multiple times.

Content-specific professional development of this kind is hard work, and not without its limitations. Many teacher groups reported that they were spinning their wheels during various phases of the inquiry cycle. Most of these struggles involved finding a focus, working with student data, and not getting into deep conversations about teaching and learning issues. Karen Ramey, one of the teacher leaders, noted her group was "information rich and data poor," while other groups stated they were "drowning in data." Some facilitators also reported that they were having difficulty "getting teachers to ask the hard questions." Ted Beaumont, another teacher leader, summed it up by saying, "Qualitating is hard to grasp." While research shows that these are not uncommon occurrences (Kazemi & Franke, 2004; Slavit & Nelson, 2010), one of the inadequacies in the design and facilitation of PRiSSM was insufficient development of both facilitation and research skills in some teacher leaders, and this led to periods of frustration and lack of progress in these professional learning communities.

5. Teacher leaders as facilitators

To realize sustained content-specific professional development with a collaborative focus, we believe that responsibility for the facilitation process must eventually fall to teacher leaders. External facilitators, coaches, and other leaders are important supports, but for a professional learning model to be intellectually and economically sustainable, leadership must be developed and nurtured inside the teacher group. Specifically, teacher leaders need support for facilitating their own content-specific discussions and analyzing student learning data. While we believe that PRiSSM succeeded on many levels,

Common inquiry cycle for content-specific collaborative work

Disseminate findings

Identify common areas for improvement in teaching or learning

Derive implications for practice

ASSESS

Develop common goals and values

Analyze data

Select an inquiry focus

FOCUS

Collect data

IMPLEMENT

Develop an inquiry focus

Implement common action

Plan a common action

Plan for data collection

Teacher-determined learning goals

Teacher groups were encouraged to:

- Focus on problems of practice directly tied to their instructional goals;

- Collect student work samples relative to a common teaching action; and

- Analyze these in a way that uncovered patterns in student understanding, not just levels of performance.

Examples of inquiry questions included:

- How can we encourage high-quality questioning by students?

- How we can help students reflect on their work in order to improve it?

- How can we improve students' written communication skills in mathematics and science?

- How do we use classroom-based learning in science and math to teach students to evaluate and apply their knowledge to different situations?

- Will a standard format for writing a science lab report conclusion improve the quality of students' reports?

- How can the use of rich mathematics tasks, worked in cooperative groups, increase student engagement and problem-solving ability?

- Will the deliberate and systematic use of learning objectives to design and implement formative assessments improve student achievement?

- How can we anticipate students' problems and support them as we (students and teachers) learn a new mathematics curriculum?

- How can we support students' understanding and use of scientific process vocabulary?

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we also believe that the project could have done more to support teacher leaders in this endeavor. A more focused development of general research skills as well as more targeted work with collecting and analyzing classroom-based student learning data would have greatly benefited teacher leaders and their professional learning communities. Further, while some communities also asked for more structure (e.g. a predetermined inquiry focus, a specific research design they could follow), accommodating these requests may have undercut the inherent buy-in that is important to the project's success. This tension is one the project leadership still debates and has yet to resolve.

LONG-TERM INVESTMENT

It is safe to say that PRiSSM is a sustainable professional development model. Two years after the project's completion, every district continues to maintain professional learning community work, much of which is quite similar to the original model, with teacher leaders continuing to serve as facilitators. We believe we achieved this important result for various reasons. The inherent teacher buy-in attributed to the project design was the most commonly heard reason why teachers described the project as powerful, and we believe it was also a key factor in the project's sustainability. The importance of teachers wanting to come to school and work with colleagues on problems of practice cannot be overemphasized.

When teacher choice is present and collaborative inquiry is grounded in teachers' personal questions and concerns, they have motivation for and investment in the purposes and outcomes of the work. Under the right conditions, teachers have the ability and capability to learn more about critical aspects of teaching and learning specific content. Further, for content-specific professional development to be effective, teachers must be able to discuss teaching and learning issues that are surfaced by student learning data. This should be the highest priority of support for professional development providers, facilitators, and school administrators.

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