

Lessons for Investigation

Teachers at this urban school in Washington are honing their powers of observation through “lesson study.”

By Jennifer Stepanek

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SPOKANE, Washington—In his book *The Sources of a Science of Education* (1929), John Dewey wrote, “To suppose that scientific findings decide the value of educational undertakings is to reverse the real case.” He went on to explain that the value of research findings can only be determined in classroom practice. The tradition of practitioner research in education reflects Dewey’s ideas, with teachers investigating and contributing to the knowledge base of education.

Lesson study is a form of practitioner research that was originally developed in Japan and is now cropping up in schools across the United States. Teachers develop professional knowledge by engaging in research processes such as formulating questions, making observations, analyzing evidence, and applying their findings.

The lesson study process begins with a small team of teachers working together to design a classroom lesson. When the lesson plan is complete, one person teaches the lesson while the other team members observe, taking careful notes



Matthew Inman (Photo by Judy Blankenship)

and collecting data on what students do and say. The teachers meet together after the lesson to discuss the data, which they use to revise and improve the plan.

Matthew Inman, a physical science teacher at Shadle Park High School in Spokane, Washington, began working on a lesson study team in the first few months of his teaching career. Two years ago, Inman brought his background in physics—he holds both a bachelor's and a master's degree—to the classroom, earning a third degree in education. “Teaching was always on my list of possibilities for what I might do,” he says, “but it wasn't the only thing on the list. When I came back to Spokane, teaching moved up because there aren't many research or other applied science opportunities here. Teaching is a super hard job—it's much harder than being a graduate student in physics. But I don't regret the change at all.”

Inman's background gives him a unique perspective on lesson study and the role of research in teaching. As a physics graduate student, he conducted research on carbon intercalation compounds. His work focused on the structure, magnetic properties, and electronic properties of the compounds. “Coming from probably the most mathematical of the pure sciences, teaching is a very frustrating arena for research,” he

says. “You can't ever get anything that's really solid in the way that you can in physics or chemistry. The problems that you're tackling in the natural sciences are much easier than the problems you're tackling in teaching.”

During the past two years, Inman and his team members have completed five cycles of lesson study, developing lessons on topics such as atmospheric pressure and the cell, and designing projects in which students created a biosphere and calculated the diameter of the sun. Lesson study is a collaborative model and Inman points out his high regard for his colleagues, science teachers Mark Hester, Jessica Johnson, and Michelle Townshend. “The value of working with other teachers is huge, getting to sit down and challenge each other,” he says. “It's such a great opportunity to have time to ask ourselves ‘Why are we doing this activity? Which of the understandings is it connected to? What do you think students will get out of it?’”

The teachers began a lesson study cycle by meeting for a full day to plan the research lesson. The teachers continued to make changes and fine-tune the lesson until the observation day, when substitute teachers took over the team-members' classes. One teacher would teach the lesson to his or her students during the first period of the day. A second teacher would teach

the lesson to a new group of students during the second period. While their colleague was teaching, the other teachers in the group would observe students and collect data about their actions and discussions, and note evidence of their learning.

Frequently, the teachers would meet briefly between the two class periods to make adjustments based on what they had observed so far. However, the majority of their discussion took place in the afternoon. The teachers met at a district building where they would debrief and discuss the data they collected during the two lessons.

Inman explains that the observations are “not a big deal” for him or for the other teachers at Shadle Park. “For me, from my student teaching experience on into my teaching, I never teach unobserved, people are always coming in and out,” he says, noting that he doesn't yet have his own classroom. “Also, we know each other so well and we work together so often, we're not worried about judgment from one another, which is an important part of this process if it's going to work well.”

The lesson study observations also tend to be comfortable because of the focus on the students. “For the whole process,” Inman explains, “the focus isn't on what the teacher is doing, the focus is on what the

Planning the lesson. It is important to select an appropriate lesson, preferably a key concept or a topic that is traditionally difficult to teach rather than something exotic or flashy. The plan the teachers create is a guide for teaching the lesson, but it also serves as a communication tool for the lesson study team, clarifying the goals and ideas being tested. The plan describes the flow of the lesson, including activities, materials, teacher questions, anticipated responses from students, and evaluation questions.

Teaching and observing the lesson. The observers take up different positions around the classroom to see the lesson from a variety of perspectives and to observe as many students as possible. They do not interfere in the lesson in any way—they do not try to help the teacher or the students. The lesson plan serves as an observation tool, guiding observers in what to look for and helping them to keep the evaluation questions and the goal of the lesson in mind.

Reflecting and evaluating. This is an engaging interaction of ideas and suggestions, with the focus always on the students. For example, the group will consider questions such as: How did students respond? Did they have difficulties? Did the lesson fit their prior knowledge and level of understanding? Were they interested and engaged? It is important that the group relies on concrete evidence from its observations, avoiding feedback that is not directly related.

Revising the lesson. Based on the problems and student misunderstandings identified in the first presentation, the lesson study team may make changes

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students are doing: How effective was the activity? How do we need to change the environment so that they end up getting more out of it?"

Inman says that the team sometimes disagrees about how to begin a lesson or how to bring closure to it, and lesson study is a good way to test out their ideas. "There are often significant debates between us as we're trying to figure out what we should do, and that's one of the real valuable parts of the process, as long as we're all willing to disagree happily," he says. "And when these debates happen as we're planning a lesson, on more than one occasion we've said 'OK, first period we'll do it this way and third period we'll do it that way.'"

Inman sees these disagreements as a way to grow as a teacher, because they challenge him to test his assumptions. "There are some things that are out of my comfort zone, but I'm working with these other people, and it's not out of their comfort zone, and so I'm challenged to do them." Planning a lesson on cell division, one of Inman's colleagues suggested that the students should physically act out the process. "Maybe as part of my defense mechanisms, I've told myself that these types of activities are actually not effective. When I'm forced to do

them or when I get to observe them, I have to acknowledge that they often *are* effective. Basically, I need to get over my discomfort and do it anyway."

"I really value the dynamic process happening between us as we go through the process of collecting data and discussing it," Inman says, illustrating the analytical aspects of lesson study. "I think that is very much what we should be basing our decisions in education on. We as teachers have the benefit of constantly being able to take in data, whether we do it formally or not."

While he acknowledges that teachers frequently cite research as informing or justifying their instructional practices, Inman is somewhat skeptical of the role of research in day-to-day teaching. "Personally, I've almost never seen any of this research," he confesses. "But as I'm doing lesson study, I very much see it as a research process that provides the feedback for change. Of course it's very high stakes. My graduate project in physics, although fascinating to me, was very low stakes for anybody else in the world. Teaching is something that is affecting people every single day." ■

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to the lesson. Sometimes, the team engages in a second round of teaching, observing, and discussing the lesson. The team may spend more time on revising the lesson than they do on the first attempt at planning. It often makes more sense to invest more time on using the concrete examples and evidence that were gathered in the observation of the lesson.

Sharing results. Lesson study teams record and share the research lessons they develop. The teachers often publish a report about their study, including the teachers' reflections and a summary of group discussions. Lesson study reports are an important part of the process because they facilitate and capture the teachers' reflections about the lesson and about broader issues of teaching and learning.

RESOURCES

Lesson Study Group at Mills College

www.lessonresearch.net

The Lesson Study Research Group at Teachers College

www.tc.edu/centers/lessonstudy

Research for Better Schools

www.rbs.org/lesson_study/index.shtml

Mathematics and Science Education Center at NWREL

www.nwrel.org/msec/lessonstudy/index.html

Evaluation

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district leaders to use data and evidence more precisely. "This program requires teachers to use data and to think about things in the larger view," she says. "They'll have to do so in ways that they haven't done before."

For example, Redlinger points out that while more schools are taking time to look at their state assessment data, these data are only one aspect of a much bigger picture of student learning. "The MSP program is an opportunity for people from different parts of the educational system to think and talk about how we evaluate student learning—which scores or which assignments are better indicators of student growth than others? I hope that everyone will come away with a better understanding of the process we can use to determine the effectiveness of practices and programs relative to student performance." ■