

# LEARNING TOGETHER: USING ACTION RESEARCH TO DESIGN PROFESSIONAL DEVELOPMENT

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## Abstract

After being part of a week-long math institute, both the principal and the Mathematics Specialist from an urban school district partnered to develop a professional development plan. It incorporated a Lesson Study Model that supported collaborative learning teams, focused on the instructional process, and incorporated reflection and feedback. Although the faculty had engaged in other forms of professional development, the lesson study process was seen as a powerful vehicle that invited a level of coaching and cross-collaboration. This article focuses on the shared viewpoints of the principal and the Mathematics Specialist who worked together to build a mechanism for professional learning for improved mathematical proficiency and understanding.

## Introduction

The creation of a collaborative learning community requires shared leadership, reflection, feedback and mutual commitment to build capacity from all parties. It also involves trying different ways of developing capacity that may not be typical to what schools experience. Given week-long training on lesson study, the school's Mathematics Specialist and I agreed to use this practice to build teacher proficiency in the area of mathematics. To further the commitment, we agreed that using action research would be the best approach for implementing and analyzing the effects of the lesson study process. Action research allowed us to carefully examine the process through self-reflection as leaders and learners.

At the time of the action research, Willard Model Elementary consisted of approximately five hundred students with 58% of the students being part of the free and reduced lunch program. The principal and Mathematics Specialist designed an action research plan where surveys were developed to ask specific questions to measure what was learned during the lesson study process. We attended weekly grade-level meetings to listen to teacher discussions, reflections, and feedback as they worked together to develop lessons. We asked many questions, such as what type of student misconceptions were expected, to help gain a deeper understanding of what the teachers were thinking as they developed their lessons.

Overall, the lesson study process involved twenty-seven teachers from K-5. The process allowed teachers to unwrap the *Mathematics Standards of Learning for Virginia Public Schools (SOL)* carefully, and plan and develop a lesson while anticipating student misconceptions in conjunction with the Mathematics Specialist [1]. Once the lesson was developed, the team decided who should teach the lesson while the rest of the team committed to collect data by observing the lesson. The team met shortly thereafter to discuss what was observed about student learning and the implications behind the lesson for future revisions. Each time the team met, the principal and Mathematics Specialist joined them to discuss and capture the thoughts and ideas of the teachers, while building a perspective on the ideas of lesson study.

### **Principal's Perspective**

Administrators must always be aware of the positive and negative impacts that change can have on individuals. The goal is not to add one more thing to the plate, but to arrange the plate for greater appeal. Lesson study was a transformative process that engaged many emotions which typically accompany change. Excitement, uneasiness, and relief are a few of the emotions I experienced as I moved along the continuum of this project. I found myself mustering up the courage to move ahead with something that would be perceived as “one more thing.” I was able to outline a professional development structure that would take the staff to a different level of collaboration by transforming how teachers think about their lessons. I presented the lesson study process as a concept where “teachers are learning together,” and I took the time to explain the components of lesson study to the whole staff. I then provided grade-level teams release time for a half-day to help them design a unit, while mapping out a lesson that they planned to observe together. Watching the teachers co-plan as a grade level, and openly discuss and exchange ideas gave powerful insight into their learning. Each discussion was a learning opportunity to clarify, extend, or simply to bring awareness to the curriculum, instruction, and assessments.

After collecting and analyzing teacher feedback, I collaborated with the Mathematics Specialist to plan year two of the project, maintaining some key structures while changing other pieces for better planning and motivation. For example, organizing the timeline at an earlier point to give teachers greater lead time with the schedule helped to reduce their anxiety. The collective efforts created deep positive changes as evidenced by teacher feedback. Many teachers understood the power of lesson study once they experienced the process, while others asked questions, such as “How do you expect us to plan like this for every lesson?” not realizing that the expectation was to experience the reflective learning process. I was seeking the type of instructional reflection that would change how the teachers anticipate student responses prior to designing the lesson.

### **Perspective from the Mathematics Specialist**

The lesson study planning, though awkward at first for some grade levels, allowed the teachers to enter another level of collaboration. As a coach, I asked questions that “lead from behind,” meaning that I used questions to guide their exploration of student thinking in the context of mathematics. It appeared that as a side effect of the lesson study process, a higher level of respect among colleagues developed as teachers began to submit ideas without fear of any undue criticism from their peers. Many of the teachers enjoyed anticipating and then addressing possible student misconceptions. In addition, they began to grapple with choosing the best teacher moves to address each component of the lesson. They began to think: “If I do this ‘teacher move,’ then how will the students respond, and how will ‘I move’ on to the next step?” This was growth in pedagogical content knowledge for many individuals on our instructional team; again, one that was not the result of a direction delivered by any one person, but a consequence of the lesson study process. No longer did they view preparing lesson plans as a requirement for compliance. Looking back, I distinctly remember one teacher stating that if this was something they were to do just one time, then she was interested in it. However, by the end of the lesson study process, she admitted how it changed how she planned. In fact, teachers began to value the collaborative planning of a blueprint to frame the thinking pathways for our learners. Even more, teachers began to analyze the effects that we can create with our choices with regard to student growth.

The observation of the lesson was another powerful part of the process. It was like a scientific experiment. As the lessons were implemented, our collaborative plan came to life. We could see how close we were to planning success, how each move that we planned would either

create a path to understanding or create a possible roadblock for the learners. It was important during the observations to remain focused on the students, and this was stressed so that the host teacher did not perceive this time as an evaluation of her teaching by the teacher observers. It was, instead, an evaluation of the plan itself and how it affected students. Furthermore, it was beneficial to have multiple pairs of eyes purposefully watching the lesson.

The post-lesson discussions were valuable professional learning opportunities for the teachers. During these discussions, not only the effectiveness of the lesson was analyzed, but also the conceptual thinking of the students. Such discussions deepen teachers' understanding of how students really learn mathematics. In addition, this post-discussion also took place in a non-threatening environment where I could introduce specific content knowledge on the mathematical concepts covered in the lesson that might not otherwise have been easily shared in a typical planning meeting.

### **What Was Learned Together?**

Many lessons were learned about our leadership roles as principal and Mathematics Specialist. Time was spent discussing and reflecting on the whole idea of lesson study and how it enhanced a learning culture. Although the collaboration was successful, several challenges presented themselves and provided an opportunity for improvement. The teachers reminded everyone how ideas can be good in theory, but given the time constraints and job demands, the ideas may not always be practical. For this school, completing a lesson study during the second or third school year quarters would have been better than during the first quarter. The principal and Mathematics Specialist realized that the teachers needed that first quarter to focus on building relationships, establishing routines, and setting the instructional pace. We also learned that a key component of each lesson study experience included a reflection on the lesson. It became evident that, when possible, a lesson reflection on the same day allowed the observed teacher to make adjustments to the lesson, as well as the teachers who would be replicating it in their own classrooms.

### **Conclusion**

Overall, this experience allowed for teacher growth not only in pedagogical knowledge, but also in mathematical content knowledge. This is extremely important, especially for elementary teachers who may not specialize in one content area. Using lesson study as professional development invites teachers to think and act differently about planning, understanding the curriculum, and delivering instruction as they become researchers of their own

craft. As the principal and the Mathematics Specialist, it was rewarding to serve as collaborative facilitators and mentors throughout this lesson study process. We both feel that we learned important instructional and leadership skills that have served us well as we moved on to new positions within our district, and we recommend the process to others.

## Reference

- [1] *Mathematics Standards of Learning for Virginia Public Schools*, Board of Education, Commonwealth of Virginia, Richmond, VA, 2009.