

PDIG 2018-2019 REPORT: ELEMENTARY MATH FOCUS PROJECT: A PLC TO SUPPORT TEACHER'S LEARNING FROM TEACHING

1. Project Description

Describe/show to what the degree the project was carried out as planned.

To support teacher's implementation of the skills and practices underscored at the Math Summer Institute, the SWL school board has offered an optional PLC for Summer Institute teachers.

For three years, this PLC has aimed to support teacher's reflection on practice, use of evidence from the classroom (e.g., student work), and, for those who have had more experience with the PLC, opportunities for leadership roles. This year a leadership role involved opening their class as model classrooms for other teachers in the school board (including those who have not attended the Math Summer Institute).

Similar to previous years, the PLC this year involved two types of PD sessions. The Co-Planning Sessions and the Classroom Observation Sessions.

From October 2018 to April 2019 the Co-Planning Sessions were scheduled on a regular basis, every 4 to 6 weeks.

The Co-Planning Sessions involved:

- sharing reflections on the classroom visits (if applicable)
- bringing evidence of student learning (from a co-planned session) to discuss what students do and don't understand, the follow-up lessons, how they addressed misconceptions, and how they would improve the lesson or task in the future.
- bringing evidence of teaching (such as video clips, photos that show how they represented student thinking and math ideas, list of questions they asked the students etc..)
- discussing personal goals for improving practice
- sharing resources to address challenges teachers raised (e.g., research-based practices and math teaching video).
- co-planning and designing a math lesson using the TQE Process, drawing from new knowledge gained from video-analysis, literature, or the group discussion.

The second type of session was a classroom observation. Teachers were encouraged to attend at least 2 Classroom Observation Sessions.

The Classroom Observation Sessions involved three phases:

- Phase 1: Pre-observation meeting focused on:
 - o discussing the goals of the sessions and the lesson (student learning goal; personal goal for improving practice)
 - o establishing the role of observers (what to listen for/watch for)
- Phase 2: Observe lesson in action
- Phase 3: Debrief meeting focused on:

- reflecting on the teaching strategies/practices and their impact on student learning
- discussing next steps for student learning and personal goal-setting

In the PDIG application, I proposed six Co-Planning Sessions and five Classroom Observation Sessions. The expectation was that all teachers involved in the PLC would attend the Co-Planning Sessions and would participate in at least two Classroom Observations Sessions. From October 2018 to April 2019, five Co-Planning Sessions and four Classroom Observations Sessions took place. As expected, virtually all teachers attended all five Co-Planning Sessions. As for the Classroom Observations, three teachers attended 3 Classroom Observation Sessions, three teachers attended 2 Classroom Observation Sessions and, three teachers attended 1 Classroom Observation Session.

Include what went well and what proved to be a challenge.

The feedback from the teachers was very positive. Teachers reported that the opportunity to hear how other teachers create rich and engaging learning experiences motivated them to tryout these new approaches with their students. The teachers also highlighted the importance of setting time aside to plan with other teachers who share their professional vision for teaching and learning. Indeed, the co-planning process provided each teacher with an opportunity to explore a lesson in depth, and provided the group with a bank of math lessons. Teachers noticed that lesson planning with a group of teachers developed their skills in specifying learning goals, questioning, anticipating student thinking, and considering alternative approaches to teaching a concept. This helped teachers reflect on the practices they improved on this year and the practices to work on next. For instance, the majority of the teachers noticed improvements in using questioning and eliciting student discourse. They also reported that our discussions focused on unpacking the mathematics underscored gaps in their skills in specifying learning goals. Indeed, in addition to the benefits related to lesson planning, teachers spoke highly about the opportunity to deepen their subject matter knowledge and rethink the math concepts and procedures they teach to mobilize student learning.

Some challenges included:

- the number of teachers involved in the PLC
- the board's territory

The PLC started with 9 teachers and grew to 13. For some of the Co-Planning Sessions, a great deal of time was allocated to lesson sharing at the expense of co-planning because of the high number of teachers. Moreover, my plan was to release teachers for half a day for the Classroom Observation Sessions to maximize the number of classroom observations per teacher however, because of our board's vast territory this was not always possible.

Include a synthesis of your journal entries

The journal entries included my reflections on the evidence brought to the Co-Planning Sessions and the teacher's reflective stance while discussing teaching and student learning.

These journal entries also summarized what was presented and the resources shared (outlined below).

The journal entries for the Classroom Observation Session described the discussion during Phase 1 and Phase 3.

Resources shared

<https://earlymath.erikson.edu/exploring-3-reads-math-protocol-word-problems/>

<https://bstockus.wordpress.com/numberless-word-problems/>

- Research article on modeling word problems (Englard, L. (October, 2010). Raise the bar on problem solving. *Teaching Children Mathematics*, pp 156-165.)
- Article on using word problems (Jackson, K. J., Shahan, E. C., Gibbons, L. K., & Cobb, P. (August, 2012). Launching complex tasks. *Mathematics Teaching in the Middle School*, pp 24-29.)
- Problem Types involving addition and subtraction taken from *Children's Mathematics: Cognitive Guided Instruction* (Carpenter et al., 2014).
- Chapter on teaching the equal sign taken from *Thinking Mathematically: Integrating Arithmetic and Algebra in Elementary School* (Carpenter et al. 2003).
- Sample of ratio problems (to use the bar diagrams) taken from *Primary Mathematics*.
- Videos: Counting collections, CGI videos, my favorite no.

2. Project Goals and Outcomes

Describe/show to what degree the goals of the approved project were met. Describe or show the gains that the participating teachers achieved through this project.

In line with the research on developing a teacher's professional vision, the goals of the PLC were the following:

- learning from teaching as a part of a community
- rethinking activities that define being a teacher
- developing and sharing new resources
- deepening subject matter knowledge for teaching
- developing a reflective stance

The table below describes the extent to which these goals were met.

Strategies used to meet goals:

- Focus on developing all four Learning from Teaching skills (Hiebert et al., 2007) during both types of sessions.
- Support a positive PLC culture that values discussion and feedback.
- Create opportunities to co-plan lessons using the TQE process
- Observe colleagues' teaching to learn from them and their students.
- Integrate research on mathematics teaching and learning to deepen teacher's subject matter knowledge.
- Use a research-based framework to shift teacher's reflective stance.

Outcomes:

- During discussions on teaching and learning, I observed improvements in their ability to make connections between teaching and its impact on student learning. I also observed improvements in how they noticed student thinking, whereby the evidence of student learning shared became increasingly more specific to support their reflections about the lesson. Although the shift in the level of specificity is indicative of the teacher's improved skill in noticing noteworthy examples of student thinking to inform teaching, the teachers continued to demonstrate difficulty in interpreting student thinking.
- Teachers relied less on traditional forms of teaching and adopted the models and approaches to teaching discussed during the PLC/Summer Institute. Evidence for this was demonstrated through the evidence of teaching brought to the Co-Planning Sessions (described above). For the teachers that hosted a Classroom Observation Session, this shift was also evident based on their choice of activities for the lesson and classroom discussions.
- In reviewing the lessons created during the PLC, I noticed that the Cycle 2 and 3 teachers tried to integrate research-based practices raised during the sessions more often compared to Cycle 1 teachers. The lessons co-created for Cycle 1 were often based on activities used at Math Summer Institute.
- Produced approximately 12 lessons in collaboration with teachers.
- Resources and discussion to deepen subject matter knowledge took place at every Co-Planning Session with the expectation that teachers would enhance their skills in unpacking mathematics to specify learning goals. The TQE templates show that the teachers were more skilled in anticipating student thinking and planning classroom discourse compared to specifying learning goals.

4. Reinvestment

Clearly describe how the resources created and/or the learning achieved by the participants can be of benefit to the educational community at large.

Reinvestment of what was produced in the PLC (i.e., the math lessons) started this year and will continue next year. That is, through PLCs and workshops I facilitated, I shared the resources created in the PLC with SWL teachers as exemplars that centralize student thinking and teaching for conceptual understanding in an engaging manner.

Next year, I will build on this by creating opportunities for leadership roles for the experienced PLC teachers. Teachers who are ready to take on this role have agreed to co-facilitate workshops next year and host Classroom Observation Sessions for teachers who have not attended the Math Summer Institute.