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Using the PoWs: Getting Started
Think You Don't Have Time to Use the PoWs?

As a middle school teacher with a 55 minute block for math class and a scope and sequence of curriculum to follow, I wasn't sure if I could squeeze one more thing into my routine. I thought through what I was currently doing and wondered if there was a little time to be gained if I found:

- problem solving in the curriculum that I could replace?
- math topics in my curriculum that the Problem of the Week addressed as well or better?
- any routines that I could shorten by a few minutes?

If I could find a little time each day, instead of taking a full day to fit in the Problem of the Week, could I at least get my students started on a problem solving process? This "Problem Solving Over Time" model is what I tried.

Day 1: 5 minutes

What: Introduce the problem.

Why: Introducing the problem quickly provides familiarity with the text and when there is time between first encountering the text and actually trying to solve the problem, students are more apt to try to understand the text before they begin to tackle the mathematics.

How: At the end of the class period, project the problem (SMARTBoard, video projector, overhead projector) or pass out paper copies of the problem. If paper is used, collect after reading. read it aloud to the class:

- have a student read it aloud to the class.
- have pairs of students read one copy together.

Note: If your students need literacy support, make sure to help them understand the text (but at this point don't encourage them to start working on solving the problem.)

Day 2: 5 minutes

Note: This may be the next day or it might be a few days later.

What: Revisit text of problem but also have students start brainstorming.

Why: This allows another opportunity to help students understand the text of the problem. Brainstorming is the first step of the writing process. Connecting the problem solving process to the writing process may provide a familiar context to students.

How: At the end of the class period, pass out paper copies of the problem (re-using the previous copies if that was how you introduced the problem originally). Depending on your students' comfort level this could be done:

- as a whole class.
- in pairs.
- in groups of three or four.

Note 1: The idea is not to lead students in solving the problem but instead to allow them to start the process. Depending on your students' problem solving experience, the first task might be for them to write three things that they know after reading the problem.

Note 2: The reason the time is short is that if the students just get started they may continue thinking about the problem and discussing it as they walk to their next class. Wouldn't it be fun to hear math talk in the hallways!

Day 3: 10 minutes

Note: This may be the next day or it might be a few days later.

What: First draft of solution.

Why: If students share ideas of how they've started thinking about the problem, it might help some students get started and other students to continue to think.

How: Use students' brainstorm papers to continue the problem solving process. Write first draft. Depending on your students' experience this could be done:

- as a whole class.
- in pairs.
- in groups of three or four.

Day 4: 10 minutes

What: Submit first draft.

Why: Students submit their work so that they can move to the next step of reflecting and revising.

How: Depending on the technology available this could be done:

- by individual students, pairs, or groups on paper that is handed in to the teacher.
- by rotating pairs of students at a computer station in the classroom.
- by individual students using computers in the classroom (laptops, for example) or in a computer lab (possibly during computer elective time).

Day 5: 10 minutes

What: Students reflect on their work.

Why: Feedback and reflection are important steps to the problem solving process.

How: Depending on how students submitted their first draft, they may:

- read written feedback given by their teacher on the paper copy that was handed in.
- read written feedback or listen to oral feedback in their "pair" group.
- read the Answer Check if they submitted online and discuss it and the suggestions given in it within their group (2, 3, or 4) .

Day 6: 10 minutes

What: Students revise their work.

Why: Revision is an important feature of the problem solving process.

How: Depending on how students submitted their first draft, they may submit their revised solution:

- as individual students, pairs, or groups on paper that is handed in to the teacher.
- by rotating pairs of students at a computer station in the classroom.
- by individual students using computers in the classroom (laptops, for example) or in a computer lab (possibly during computer elective time).

Total time: 50 minutes in 6 days that could span a two or even three week period and some of the tasks could be assigned as homework. Experiment with the time during the class that you assign the task. If you feel you are taking too much class time then do the task at the end of the period. If you are comfortable and able to stop the task, try it at different times of the class period (beginning, middle as a transition, or at the end). Find the combination that works best for you that maximizes both use of time and the benefit of the task.