

PD on Your Plan for Elementary Math

This professional development was designed with the needs of teachers in mind. It is rich in valuable information, chunked in small enough parts that can be completed during school time, planning times or meetings, and it is designed in order that teachers can work independently, in small groups, or online with other teachers.

Math Tasks – Part Three Facilitating Math Tasks

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This document is intended to be paired with the Math Tasks Part Three video found here: <http://pdonyourplan.com/lesson/math-tasks-part-3-facilitating/>

Moriah and DeAnne are both at the final steps to completing their OEMS certification.

Are you curious about becoming an Oklahoma Elementary Math Specialist? Explore Here: <http://www.okhighered.org/ok-math/>

Pause and Think Reflection Questions:

GETTING ORGANIZED

- ☀ Once they have had time to think about what the problem is asking and what information they will need to know to move forward, what tool could you showcase that might help them as they move forward?
- ☀ Is it something you will need to create ahead of time; is it one they have used before?
- ☀ Is it something they can tweak to make their own, to make it make sense to them.
- ☀ If you have already created a problem, you may already have some of these in mind, if not, consider thinking about what kind of scaffolds you would build in for the starburst problem from part one.
- ☀ Why is it vital for students to have time to think to themselves first?
- ☀ What are some of those benefits?

SCAFFOLDING

What might your students need in order to be successful problem solvers?

How might the scaffolds you use change as your students' skills evolve with problem solving?

Scaffolding Foldable Tool (see graphics in video)

- Define: Students need to take time to get to know the problem. What do you know? What do you need to figure out?
- Plan: What tools might you use to solve the problem? What steps might you take in determining your solution?
- Solve: Using a variety of mathematical tools like visual models, charts and tables, writing a number sentence etc...students work to solve the problem.
- Justify: This section reminds the students to state their solution and then reason why their solution, and their solution path makes sense.

SCAFFOLDING FOR SPECIAL NEEDS

- ✿ Think about students in your class who struggle the most. Will they be able to use this tool?
- ✿ Would the tool need to be changed?
- ✿ Do you have a better one for them?

STUDENTS ARE DOING

- ✿ How does collaborative learning happen in your classroom?
- ✿ What are the challenges and victories you have had with students working in pairs or small groups?
- ✿ What does good math talk/discussion sound like?
- ✿ Do your students know how to ask questions and give criticism in a constructive manner? What are some of your strategies to help them have these types of discussion?
- ✿ What do you have the students create that will help them remember the lesson and/or be accountable for their learning?
- ✿ What happens to the work the students do once they have solved the problem? How does it have impact?

THE TEACHER IS DOING

- ✿ Why are open-ended questions so important to foster classroom discussion?
- ✿ What are the characteristics of meaningful open-ended questions?
- ✿ What are the advantages or disadvantages for the teacher solving the problem before presenting the problem to the students?
- ✿ What are some strategies you use to foster good classroom discussions?

Good Read:

What Are Some Strategies For Facilitating Productive Classroom Discourse

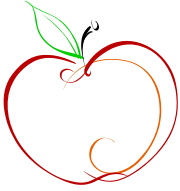
<http://www.palgrave.com/studentstudyskills/page/problem-solving-skills/>

productive discussions in mathematics class (see, e.g., Bell, 1993; Chazan, 1993). Over the past 15 years, fortunately, the field has begun to tackle the problem of providing teachers with guidelines and tools to support the facilitation of productive classroom discussions. Nine strategies for facilitating productive discussions are listed below and are discussed in more detail throughout the remainder of the paper.

Good Read:

The Tools of Classroom Talk

http://www.mathsolutions.com/documents/9780941355537_CH2.pdf



As teachers, we elicit responses from our students in various ways—with questions, commands, hints, jokes, and so on. When students become familiar with our inventory of phrases and expressions, they usually know what we expect of them. Although we rarely stop to think about our most common conversational prompts, they are among our most important instructional tools. From our work in Project Challenge, we have found it useful to think carefully about these tools: it matters what you say and how you say it.

Good Read:

Asking Effective Questions

http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/cbs_askingeffectivequestions.pdf

8 Eight Tips for Asking Effective Questions

1. ANTICIPATE STUDENT THINKING

An important part of planning a lesson is engaging in solving the lesson problem in a variety of ways. This enables teachers to anticipate student thinking and the multiple ways they will devise to solve the problem. This also enables teachers to anticipate and plan the possible questions they may ask to stimulate thinking and deepen student understanding.

Good Read:

Using Questioning to Stimulate Mathematical Thinking

<http://nrich.maths.org/2473>

“The other reason is that the teachers have yet to develop a questioning style that guides, supports and stimulates the children without removing the responsibility for problem-solving process from the children.

Types of Questions

Within the context of open-ended mathematical tasks, it is useful to group questions into four main categories (Badham, 1994). These questions can be used by the teacher to guide the children through investigations while stimulating their mathematical thinking and gathering information about their knowledge and strategies.”

Still to Come

**Math Tasks Part 4:
Assessing Problem Solving**