

# Planning Facilitation for Math Calculation

Math calculation is a complex activity that involves recalling basic math facts, following procedures, working carefully, and checking one's work. Math calculation requires a careful (i.e., planful) approach to follow all of the necessary steps. Children who are good at math calculation can move on to more difficult math concepts and problem solving with greater ease than those who are having problems in this area. For children who have trouble with math calculation, a technique that helps them approach the task planfully is likely to be useful. Planning facilitation is such a technique.

Planning facilitation helps students develop useful strategies to carefully complete math problems through discussion and shared discovery. It encourages students to think about how they solve problems, rather than just think about whether their answers are correct. This helps them develop careful ways of doing math.

## How to Teach Planning Facilitation

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Planning facilitation is provided in three 10-minute time periods: 1) 10 minutes of math, 2) 10 minutes of discussion, and 3) 10 more minutes of math. These steps can be described in more detail:

*Step 1:* The teacher should provide math worksheets for the students to complete in the first 10-minute session. This gives the children exposure to the problems and ways to solve them. The teacher gives each child a worksheet and says, "Here is a math worksheet for you to do. Please try to get as many of the problems correct as you can. You will have 10 minutes." Slight variations on this instruction are okay, but do not give any additional information.

*Step 2:* The teacher facilitates a discussion that asks the children about how they completed the worksheet and how they will go about completing the problems in the future. Teachers should not attempt to reinforce the children. For example, if a child says, "I used xyz strategy," the teacher should not say, "Good, and be sure to do that next time." Instead, the teacher may probe using a statement designed to encourage the child to consider the effectiveness of the strategy (e.g., "Did that work for you?"). Discussion works best in groups in which students can learn from one another. The general goals are to encourage the children to describe how they did the worksheet. The teacher's role is to encourage the children to verbalize ideas (which facilitates Planning), explain why some methods work better than others, encourage them to be self-reflective, and get them to think about what they will do the next time they do this type of work. Here is a list of suggested probes:

- "How did you do the page?"
- "Tell me how you did these problems."
- "What do you notice about how this page was completed?"
- "What is a good way to do these pages, and what did this teach you?"

- “Why did you do it that way? What did you expect to happen?”
- “How are you going to complete the page next time so that you get more correct answers?”
- “What seemed to work well for you before, and what will you do next time?”
- “What are some reasons why people make mistakes on problems such as these?”
- “You say these are hard. Can you think of any ways to make them easier?”
- “There are many problems here. Can you figure out a way to do more?”
- “Do you think you will do anything differently next time?”

*Step 3:* The teacher gives each child a math worksheet and says, “Here is another math worksheet for you to do. Please try to get as many of the problems correct as you can. You have 10 minutes.”

## **Aids to Facilitate Discussion**

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- Project a blank worksheet so the children can see it during discussion.
- Make an overhead of a completed worksheet (with the name omitted).
- Have the children do a projected blank worksheet as a group .

It is important for teachers not to say things such as, “Watch me. This is how to do it,” “That’s right. Good, now you’re getting it!” “You made a mistake. Fix it now,” or “Remember to use your favorite strategy.” This discourages discussion among the students and does not help to meet the goals of the strategy.

## **Who Should Learn Planning Facilitation?**

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This instruction is likely to benefit students who are poor at mathematics calculation. Because Planning facilitation helps students focus on their approach to solving problems, it helps them be more careful or planful. Children who score low in Planning are likely to improve the most from this instruction.

## **Resources**

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Good starting points for mathematics intervention can be found at <http://www.mathgoodies.com>, <http://www.sitesforteachers.com>, and <http://www.mathprojects.com>.

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