

Modelled/Guided Problem Solving

Modelled/Guided Problem Solving is one of the five components that make up the Balanced Math Program.

This component is an essential part of the program because teachers are given the opportunity to focus on a different small group of students each day. It is difficult to spend quality instructional one-on-one time with every student in the class. Incorporating Modelled/Guided Problem Solving into the everyday math schedule gives the teacher that opportunity.

In The Modelled/Guided Group the teacher teaches the basic steps to problem solving and the different strategies and approaches that can be used to solve problems in math. Because the teacher is working with only a small group of students, the teaching of these strategies is more effective than teaching to a whole class.

During large group instruction, many students often become distracted or do not pay attention. The main advantage of small group instruction is that the teacher is interacting with all of the students. This helps to ensure that they are actively involved and learning what is being taught.

Another advantage to small group instruction is that the teacher can easily identify students who have difficulty grasping a concept and may require some support which can later be reduced as the student achieves independence in the use of the concept.

When the students are grouped homogeneously, the teacher can use this

Modelled/Guided Group time to provide this temporary support or extra help.

The same is true for the students who have a solid grasp of a concept. The teacher can use this time to challenge these students and guide them to the next level of understanding.

With the opportunity to work closely with small groups of students on a regular basis the teacher is able to focus on each student's mathematical strengths and weaknesses. This knowledge allows for productive programming to be developed for the classroom, as well as the recording of in-depth student anecdotal reports which will be used for formative assessment.

Modelled/Guided Problem Solving - What Is It?

Modelled/Guided Problem Solving is a small group of about four or five students working closely with the teacher to solve a problem. The term "modelled" refers to the teacher modelling or demonstrating actions that lead to effective problem solving. The term "guided" refers to the teacher guiding or leading the students through the steps and strategies of problem solving they have already learned.

These two terms are linked into one group because generally for the first half of the year the students require direct modelling from the teacher to demonstrate how to solve a problem, but as the students become more familiar and confident with the process and strategies involved in problem solving, they require less demonstration.

The teacher then takes on the role of a guide, to oversee, offer advice and point students in the right direction. Before creating and operating a Modelled/Guided group, the teacher needs to be familiar with the following factors that encourage effective problem solving:

- the basic steps for problem solving
- the different problem solving strategies
- the use of mathematical manipulatives to help when problem solving.

The Basic Steps for Problem Solving

Problem solving can be an overwhelming task for students, as they often do not know where to begin. Students need to learn:

- how to read the question for understanding
- how to organize the information given
- how to decide on a strategy for solving the problem
- how to communicate that strategy and the solution through written and oral form.

When students are encouraged to use the Basic Steps for Problem Solving, they have a framework to guide them through the problem solving process. They develop good problem solving habits such as reading the question twice before beginning and double checking their solution. Developing positive habits such as these lead students to success and confidence when approaching new problems.

Sample Modelled/Guided Problem

There are 87 grade 3 students going on a field trip. It is your job to organize the buses for the trip. You want the number of students on each bus to be as even as possible. Each bus needs to have at least 20 students on board. Show two different ways of organizing the 87 students onto the buses for the field trip. How many buses will there be? How many students will be on each bus?

Step 1: Reading the Question Twice

Before beginning any problem, students need to be clear about what exactly is being asked. Due to a lack in confidence when problem solving, too often students will read the question once and decide they don't understand and ask for help. On the other hand, some students will read the question once and will focus only on the numbers in the problem and quickly choose a random operation.

Students need to be able to focus on the words in the problem and understand what is being asked. When students do not understand the problem, the chances of them being able to solve it are slim. Students need to be taught the importance of reading the question more than once to ensure they have a clear understanding of what is being asked.