contents and sample pages

Title	Cooperative Problem Solving in Mathematics Grades 5-8
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What is Cooperative Problem Solving?

Cooperative Problem Solving involves students working together in small groups, sharing and developing their knowledge as they attempt to solve a group problem. This type of learning is designed to support the teaching of mixed ability classes in mathematics and to address gender and equity concerns. When students work in cooperative groups the individual's 'risk of being wrong' is reduced and replaced by group risk taking. *"If **we** get it wrong it does not mean that **I** am stupid."*

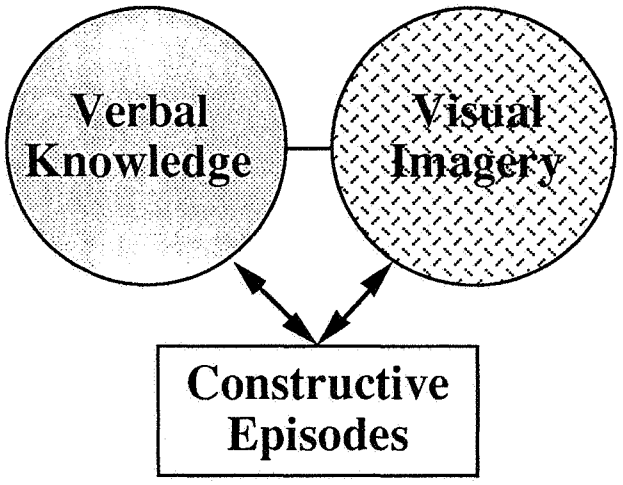
Another feature of cooperative problem solving is that it encourages the development of students' mathematical language. Students learn by talking, listening, explaining and thinking with others, as well as alone. By solving problems cooperatively, students use their own language to negotiate meaning for the terminology of the problem.

Teachers are aware that even in very traditional classrooms, the first person that a student will ask if they don't understand, is the student next to them. Only if none of the students around them understand will they dare to ask the teacher. Even then, they will frequently put up their hand only to tell you that their 'neighbour' doesn't understand.

In small cooperative groups students have a chance to exchange ideas, to ask questions freely, to explain to one another and to help one another understand the ideas in a meaningful way. At its best, cooperative problem solving offers opportunities for success for all students.

Small-group learning should allow the teacher to move from the centre of instruction and give more opportunity for directed input based on need. This shift in the teacher's role will aid the information gathering process for assessment that is necessary if **all** students are to succeed in a mixed ability class.

The activities in this book are designed to assist teachers in creating mathematics learning environments which enable children to **link** their **verbal knowledge** with their **visual imagery** through a **constructive episode** (or contextual setting) frequently involving the active manipulation of physical objects. The combination of these three components will increase the likelihood of effective long-term learning taking place [Clements & Del Campo (1989), Presmeg (1986), Gagne & White (1978)].



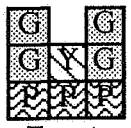
Creating links in cognitive structures

Grouping

There are many different ways of forming groups. I prefer to use random heterogeneous groups of four which are changed on a regular basis - say weekly. When I form groups according to need, they appear to be nothing more than another random grouping.

View Blockers #3

You need 3 red blocks. When you look at the model you see this view:

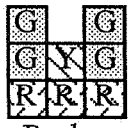


Front

Help your group build the model from the cubes.

View Blockers #3

You need 6 pink blocks. When you look at the model you see this view:

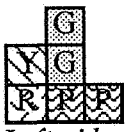


Back

Help your group build the model from the cubes.

View Blockers #3

You need 4 green blocks. When you look at the model you see this view:

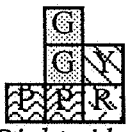


Left side

Help your group build the model from the cubes.

View Blockers #3

You need 1 yellow block. When you look at the model you see this view:

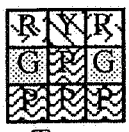


Right side

Help your group build the model from the cubes.

View Blockers #3

When you look at the model you see this view:

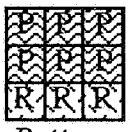


Top

Help your group build the model from the cubes.

View Blockers #3

When you look at the model you see this view:



Bottom

Help your group build the model from the cubes.