

# How Can Problem Solving Competence Be Nurtured?

Wayne Pusch

Integrate problem solving into mathematics instruction from the beginning of the year. Problem solving is an important bridge between informal concepts and processes and more formal symbolic mathematics.

1. Introduce concepts and practice computation through the extensive use of quality word problems.

Word problems make mathematics meaningful.

i.e. Cynthia is buying supplies for her birthday party that ten friends are attending. She needs two balloons for each person. Six balloons are in each package.

How many packages are needed?

How many balloons are left unused?

## Extension:

- What other supplies may she need?

Students could act out, draw pictures or use manipulatives to gain understanding and plan procedures. They may use repeated addition, repeated equal subtraction, skip counting, multiplication, or division to solve.

- It is suggested that out of 10 days of instruction, students should be challenged with nine days of problem solving and one day to review or practice computation, if necessary.

2. Make manipulatives readily available especially during initial stages until understanding is achieved and connections are formulated.

3. Choose quality problems - students must see the relevance if transfer is expected.

4. Use different instructional approaches

- whole class
- small groups
- pairs
- individual
- learning centres
- thematic

5. Coordinate with other subjects

- Problem solving is a general process. Many problem solving activities can be integrated across subject areas giving students exposure to a wider variety of problems and opportunity to apply their skills.

6. Observe for strengths and weaknesses of students and prepare for those ready to move on. Use extensions.

7. Provide calculators for students to use when computation becomes too burdensome or difficult.
8. Pose questions to develop observing, listening and reading skills.
9. Provide for interaction among students.
10. Provide sufficient time to fully explore the problem.
11. Establish an open, supportive and secure classroom environment.

Progress through a problem involves moving forward and back across the various steps as many times as necessary to reach a satisfactory solution. A major function of the teacher is to assist students in moving forward and back.

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Obtained from Math Central

<http://MathCentral.uregina.ca/>