LEARNING and TEACHING POINTS
for
Chapter 3
Learning How To Learn Mathematics

Teachers will help primary school children to learn how to learn mathematics:

(a) if they value and reward understanding more highly than mere repetition of learnt procedures and rules; and

(b) if they ask questions that promote understanding rather than mere recall of facts and learnt routines.

Use question-and-answer sessions with the class and with groups of children specifically to ensure that they are making connections from their experience of doing mathematical tasks. For example in promoting understanding of subtraction, start with a real-life situation such as: when playing a board game, Tom is on square 13 and wants to land on square 22, what score does he need? Connect it with language, such as what do we add to 13 to make 22? What is 22 subtract 13? Connect it with a picture: what do we do on a number line to work this out? Connect it with symbols: what would we enter on a calculator to work this out? (22 – 13 =).

To promote the formation of equivalences and the recognition of transformations, frequently ask children the questions: In what ways are these the same? How are they different? How could this change into that? For example, look at the numbers in a set (for example, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30) and ask, what is the same about them? (They are all multiples of 3.) Select two numbers from the set (for example, 15 and 30) and ask, how are these two different from each other? (15 is smaller than 30, 30 is larger than 15, and so on.) How can one number be changed into the other number? (Double the 15, halve the 30, and so on.) Follow the same approach with sets of shapes.

Sorting and naming are often components of young children's play. Teachers should recognize the importance of such experiences in laying the foundation for genuine mathematical thinking through classification.