TRAINING MENTAL CAPACITIES – A STRATEGY TO MAKE LEARNING EFFICIENT AND EFFECTIVE

Mihaela Singer
National Curriculum Council

The methodology developed during the research covers four stages:

1. Structuring the information to be learned, according to an epistemological model.

2. Systematical training of the mental capacities focusing in different manners on each of the following: *understanding the concepts, computing procedures, and problem solving.*

3. Random training of the developed capacities. This type of training plays an important role in consolidating the mental structures acquired by the child. The technique employed is the mental game starting from isolated information. The start could be: *isolated numbers, groups of numbers, computing exercises, problems, and symbolic schemata*. Examples could be given for different grades, but the most spectacular results could be seen in primary education. For example, in Grade 1, the teacher proposes the number 4 and asks for creating the sequence of natural numbers by fours till 20. Another riddle-game requires the composition of a number in which 4 is a compulsory component, or it is not at all a component. Moreover, the students are stimulated to create problems starting with the number 4. The problems could be connected to practical situations, but also to theoretical mental problems, for example: "Use 4 coins to compose a given amount of money", "We know that we start with number 4 and we add its double. What is the number we get?", etc.; it is important to practice both types and to pass from one to another. These procedures are then carried out starting from other numbers and practicing serial arrangements, comparisons, estimations, creating problems, problem-solving, composing and de-composing numbers. These are practiced orally, mentally, in written forms.

4. Structured training, which is targeted at the assimilation of invariants. This is done by constantly resorting to diagrams and models. The exercises become gradually complicated, following the initial model in various ways: with direct support from objects or concrete schemata, or without this support, by operating in an internal language, and later by operating with literal symbols for numbers. The mental structure created in this way is confronted with itself by "shifting" its elements, by applying different thinking operations, by passing from one level of abstraction to another, etc.

Instead of a "drill and practice" strategy, a "structure and practice" strategy is developed. This training leads to the creation of a dynamic mental structure, able to mobilize in various situations and to find creative solutions for complex problems.