

## SECRETS OF THE RED RODS

*Crystal Dahlmeier explains the thinking behind Montessori's sensorial materials*

When visitors observe a Montessori environment, they are often impressed by the exquisite array of sensorial learning materials. The colours, design and placement of the materials attract both the eye and the hand. This appeal has been planned, because the use of the materials will assist the child in her passage from being a concrete learner to an abstract thinker. This passage is one which only the child can do for and by herself. The sensorial material is a bridge to assist the child in that journey.

According to Montessori, to move from concrete to abstract, two things must occur. There must be absolute clarity in the concrete and the child must reach a certain level of mental maturity. The sensorial materials support both of these preconditions and are designed to facilitate the conceptualization of perceptions. The sensorial materials demonstrate each concept in isolation, using a multi-sensory approach. This focuses the child's attention in order to enhance learning. They prepare the child's eye, hand and mind for reading, writing and mathematical concepts.

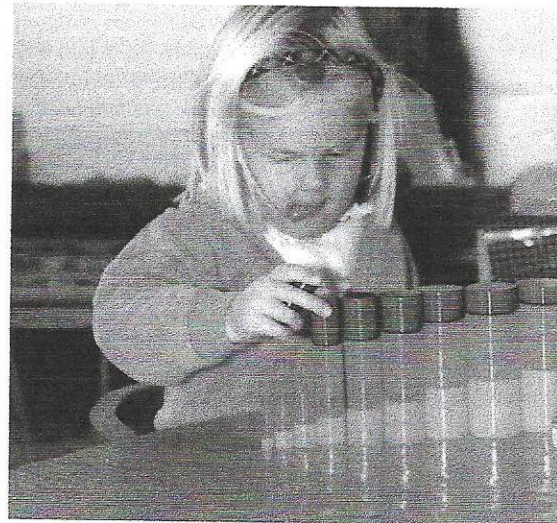
As the child engages with the materials, the learning process moves from experiencing a sensation, to understanding it by ordering, classifying, and sequencing. For example, a child may decide to work with the red rods, a set of 10 rods differing only in length. The shortest is 10 cms long, and each succeeding rod is 10 cm longer than the one before. All ten are painted red. The teacher will demonstrate how to carry each to the mat, with a hand on each end so the child not only sees, but also feels each as it increases in length. From the order on the shelf, the child places rods randomly on the mat, then attempts to re-order from longest to shortest, experiencing mathematical concepts (length and difference) without a mathematical term ever being used. Following much exploration, when the child orders and sequences the rods, the teacher will attach language to further refine the child's understanding – *long* and *short* are introduced, followed by comparisons and superlatives – “Which is longer?” and “Can you find the shortest rod?” Various games are played, which support the goal of helping the child refine understanding of length as a necessary prerequisite for mathematical understanding. Those red rods and other similar materials like the cylinders, the pink tower and the broad stair will be referred to repeatedly throughout the three year cycle as mental processes mature.

The sensorial materials also prepare the child for reading and writing. Some materials, like the cylinders or the geometric insets which are held by their little knobs between finger and thumb, prepare the muscles of the hand for writing, others prepare the ear for hearing finer and finer differences in sound (to prepare for letter sounds). Others prepare the eye to see slight differences, a necessary prerequisite for letter recognition and reading. When each step is taught in isolation the child will gradually, at her pace and in her particular learning style, integrate the different skills and will emerge, often seemingly effortlessly, as a competent reader and writer. We know, however, how much has happened within the child to enable this, and that only the child, through active manipulation of the materials, can make it happen.

# AT SCHOOL

## SENSORIAL PART 1: SHAPE, SIZE AND SOUND

Children need to be ready to learn before they can actually begin and their five senses are the first instruments of their understanding. In Montessori nurseries and kindergartens we give all children activities to develop their senses - whether it be judging the differences between two shapes or hearing that one sound is higher in pitch than another. All children begin by learning to judge differences, selecting which cylinder goes into which hole in a block, which colour is next in a graded series, or whether a smell is the same or different from the last one. Montessori stressed that sense training is important for two to three year olds who have “accidental and essential impressions all mixed together, creating a confused but significant wealth in the mind.” The sensorial material is designed to help the child, at the time when he or she is uniquely ready for it, begin to make sense of the world by putting these impressions into some kind of order.



## IN THE NURSERY: SHAPES

One of the first pieces of sensorial apparatus children use when they come into the nursery are the geometric solids. These give the idea of the pure shape and they can be explored with the hands, matched with identical ones, and sorted into sets according to their geometric properties. At first we simply present them in baskets, each basket having one type