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Opinion

Neuroeducation and Montessori Pedagogy: A Partnership for how the Child's Brain Learns

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Neuroeducation is the science that studies how the brain learns, and how information is processed in the Central Nervous System. Through Neuroeducation, it is possible to identify the elements that favor or hinder the acquisition of knowledge in the child´s brain.

The human brain has neural connections, which are structures capable of capturing information through stimuli from the environment. The role of Neuroeducation in the classroom is to help the educator to rethink on how to teach and how each child receives and processes these environmental stimuli.

Learning is a result of the exchange of information between neurons, which change at each new knowledge captured by the brain. Each new experience and contact with the environment through stimulus provides for the child, the formation of different synaptic connections that result in new knowledge and skills.

What is the relationship of Neuroeducation and Montessori Pedagogy?

Just like Neuroeducation, Montessori Pedagogy is also a brain-based developmental method that values the learning through the stimuli by the multisensory materials. The multisensory materials stimulate brain´s areas responsible for coordination, concentration, decision-making and strategic thinking, visuospatial system, creativity, oral and written language and mathematics. In addition, Montessori Pedagogy values a crucial concept in Neuroeducation, critical in the first 6 years of the child's life, which means Neuroplasticity or brain plasticity.

The early stage of child development, comprising from birth to six years old approximately, is crucial for acquiring knowledge and building skills, because in this period the child's brain has a higher speed capability and absorption information. This means that the neuronal organ of the child is more likely to receive stimuli and changes from the environment. This phase is termed in the field of neuroscience as "windows of opportunity" or "sensitive periods of learning".

According to the American Montessori Society, the sensitive period is: "A critical time during human development when the child is biologically ready and receptive to acquiring a specific skill or ability-such as the use of language or a sense of order-and is therefore particularly sensitive to stimuli that promote the development of that skill. A Montessori teacher prepares the environment to meet the developmental needs of each sensitive period".

Dr. Maria Montessori observed in her studies, that children up to 6 Years of age had strong sensitivity and ease to understand new concepts and develop different skills. During this sensitive period of learning, it is possible to observe the child performing the same activity repeatedly, in a concentrated and attentive manner.

To the extent that the child experiences new practices and challenges of learning, the brain is reorganized in order to assimilate the new knowledge. This results in changing in the neural structure and function of the organ, thereby generating different cognitive abilities in the child's life.

At school or at home, the tip is to observe the child's learning interests and encourage them constantly in order that they can make progress in the development of new acquisitions and skills. The brain needs stimuli to develop and improve skills. The organization of a space for an enjoyable learning should take into account the interest and the cognitive structure in which the child is because the sensitive periods provide multiple possibilities for new knowledge and skills for the child.

Regarding the Montessori classroom, the teacher prepares the environment with carefully selected, aesthetically arranged materials that are presented sequentially to meet the developmental needs of the children using the space.

As we can see, Neuroeducation and Montessori Pedagogy go together, side by side, in favor of child's brain development. The knowledge of how learning occurs in the brain is essential for planning activities that consider the characteristics and educational needs of each child. This makes all the difference in the child´s learning process! [1,2].

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