The Curriculum

Our Montessori classroom is designed to meet the ever changing needs of the 3 - 7 year old child. Beauty and order play an important role in creating the child sized atmosphere which is carefully designed to encourage curiosity and a love for learning. We offer each child the opportunity:

* To develop a solid academic foundation and desire for lifelong learning
* To encourage independent decision making and problem solving skills
* To become an integral member of the classroom community
* To develop positive social, emotional, and physical growth in a respectful environment

The Montessori curriculum is designed so that each child is allowed to progress at a rate that encourages mastery of a subject, while allowing further exploration of a child's special interests.

The core subjects include lessons in:

Practical Life

The direct aims of the practical life exercises are a sense of order, concentration, coordination, and independence. The exercises of practical life are related in use to at least one of four main areas:

Control and Coordination of Movement; Learning to pour, carry, cut, polish, walk, sit, and move gracefully.

Care of Environment; Cleaning up and putting away works, sweeping, wiping up spills, watering plants.

Care of Person; Washing hands, toileting, nose blowing, dressing and undressing, (buttons, snaps, zippers, buckles, lacing, tying, etc)

Social Relationships; learning to take turns, be polite and thoughtful of others, listening and responding appropriately to peers and adults, and generally show respect for the environment and others.

Sensorial

Dr. Montessori observed that young children absorb information about their world through their senses. Adults can easily pull up a mental image for concepts like long or short, heavy or light, square or round. Montessori developed special apparatus and activities that isolate each of these concepts in a concrete way for the child. Dr. Montessori said, "the function of the sensorial materials is not to present the child with new impressions of size, shape, color, and so forth, but to bring order into the myriad of impressions he has already received and is still receiving". In addition, the sensory materials help to refine such impressions.

Many sensorial materials introduce the child to concepts of arithmetic, fractions, geometry, algebra, and calculus through hands-on manipulation and comparisons. This hands-on sensorial approach grounds the child with "deep roots" of understanding before the canopy of higher abstraction is introduced.

Language (reading and writing)

Reading is a complex and abstract concept which requires the development of many pre-reading skills including;

Phonological awareness These skills directly relate to reading ability. They include:

* Rhyming (similar word sound endings)
* Alliteration (similar word sound beginnings)
* Syllable, word, and sentence segmentation (taking words apart)
* Onsets and Rimes (beginning and endings of words)
* Phonemes (individual sounds)

Phonemic Awareness Refers to the ability to detect, blend, segment, and manipulate individual sounds in words.

They include:

* Phoneme blending (putting sounds together to make a spoken word)
* Phoneme segmentation (when given a spoken word, the child can segment it into individual sounds.

Phonics This refers to the actual teaching of letter-sound associations and the letter patterns used to spell words. Phonics instruction should only begin after the child has developed phonological and phonemic awareness and

has the ability to understand that there are consistent relationships between letter symbols and letter sounds.

The physical act of writing is complex and involves many factors. The writing instrument must be held correctly, the hand must be capable of moving lightly yet firmly across the paper, and coordination between the mind and the hand must be developed to direct the hand to move with precision. Most activities of the practical life and sensorial areas have an indirect purpose of preparing the hand to write. Montessori's "metal insets" directly prepare the hand for writing and help the child gain control over the writing instrument. The sandpaper letters are lightly traced by the child, impressing upon his muscular and visual memory how to form each letter.

Montessori language materials are designed to help the child develop a strong sense of phonological, phonemic, and phonics skills. Additional didactic materials further develop the skills of reading, writing, spelling, grammar, vocabulary, and literature.

Mathematics

Through the use of Montessori's unique math materials, the child is presented mathematical concepts in a concrete way that allows the child to understand numbers and how they are manipulated through the various disciplines of math. Rote memorization of facts helps with test taking and mundane exercises, but it does nothing to instill logical thinking and problem solving. Montessori's didactic materials develop the mathematical mind.

* Arithmetic

Arithmetic deals with shape, space, numbers, and their relationships and attributes. In the Montessori classroom, the concepts of numeration, the decimal system, computation, arithmetic tables, whole numbers, fractions, and positive numbers are presented.
The association of a numeral with a specific quantity is an abstract concept that Montessori approaches through use of sandpaper numbers and one to one correspondence lessons. These skills are directly related to the lessons learned through many of the sensorial materials.

For instance, the child learns to sort the 10 red rods by length (shortest, 10 cm to longest, 100 cm). By carrying and manipulating these rods the child experiences length in a very concrete way. The child is then introduced to the red and blue rods. These are the same lengths as the red rods with the addition of each rod being visually divided into segments of one through ten. Now the child not only orders the rods by length, but can count each segment of the rod experiencing "one" as the shortest rod and "ten" the longest.
The Montessori golden bead materials introduce the base ten decimal system in the same multi sensorial way as do all the various materials used for teaching the operations.

*** Algebra**

Whereas arithmetic deals with specified numbers, algebra introduces quantities without fixed values, known as variables.
Through the use of Montessori's binomial cube (a+b)3, trinomial cube (a+b+c)3, and the square of Pythagoras box the child manipulates, compares, discriminates, and internalizes concrete concepts in preparation for the eventual introduction to the symbols and variables of elementary algebra. Counting a Square or Cube bead chain not only teaches skip-counting, but also can be manipulated to show the square or cube of a number.

***Calculus**

In a nutshell, calculus deals with understanding something by looking at the small pieces. Differential calculus cuts something into small pieces and observes how it changes while integral calculus joins or integrates the small pieces together to find how much there is. Montessori's 5 different constructive triangle boxes demonstrate how various geometric shapes can be manipulated to form entirely different shapes. For instance, the child can use equilateral triangles to form a hexagon then calculate how many triangles were used to create the hexagon and so forth. Circles can be broken down into fractions and pieces compared to find equalities. These kinds of lessons are the concrete building blocks for later calculating area, circumference, radius, and so forth.

The relationship between arithmetic, geometry, algebra, and calculus is constantly emphasized in the mathematics materials.

Cultural, Science, Technology Subjects

The cultural curriculum, which encompasses biology, botany, zoology, geography, history, earth science, life and physical science, technology, and ecology, is a rich part of the Montessori classroom. Dr. Montessori used the "Five Great Lessons" as a way to help the child begin to understand how the world is connected and came to be. These lessons help provide a "big picture" of how the sciences, art, history, language, mathematics, and geography are interrelated. These lessons are exciting and designed to awaken the child's imagination and curiosity. The lessons are rotated throughout a two year cycle.

1. **The Creation of the Universe**

This lesson leads to the study of:
Astronomy: solar system, stars, galaxies, comets, and constellations
Meteorology: weather, clouds, water cycles, erosion
Chemistry: states of matter, mixtures, reactions, elements, experimentation
Physics: magnetism, electricity, gravity, energy, light, sound, heat, friction, motion
Geology: Types of rocks, minerals, land and water forms, volcanoes, earthquakes, eras of the earth
Geography: maps, globes, land and water form names, continents and countries

2. The Time Line of Life

This lesson leads to the study of:
Biology: organized groups, the five kingdoms, specimens, observation, parts of animals
Botany: classification, functions of, parts of plants (seeds, fruit, leaf, stem, root, flower), types of plants
Habitats: location, characteristics, food chains/webs, symbiosis, adaptation, ecosystems, conservation
Ancient Life: eras of the earth, extinction, fossil records, excavation
Animals: classification, needs, similarities/differences, human systems, nutrition, hygiene

Monera, Protista, and Fungi Kingdoms: what they are, classification, observation

3. The Time Line of Humans

This lesson leads to the study of:
History: timelines, ancient civilizations, world history, history of specific continents and countries
Culture: art, artists, music, composers, dance, drama, architecture, design, philosophies, grace and courtesy
Social Studies: current events, government, economics, commerce, volunteering, charity
Discovery and Invention: scientists, inventors, inventions, simple machines, technology, entrepreneurship, STEM manipulative activities, coding with "Primo Cubetto"

4. The History of Language

This lesson leads to the study of:
Reading: literature, poetry, non-fiction, myths and fold tales, authors, comprehension, analysis, literary terms
Writing: elements of style, function, composition, letter writing
Language: spoken language, foreign languages, history of languages, speech, drama
Structure: alphabets, bookmaking, grammar, punctuation, sentence analysis, word study

5. The History of Numbers

This lesson leads to the study of:
Mathematics: operations, fractions, decimals, multiples, squares, cubes, intro to algebra and calculus
Numbers: origins of numbers and systems, types of numbers, mathematicians
Geometry: congruency, similarity, nomenclature of lines, angles, shapes, solids, measurement
Application: story problems, measurement, estimation, graphs, patterning, money concepts, clocks and time