

PMA Cosmic

Let us give the children a vision of the universe. - Maria Montessori



Cosmic & The Montessori Great Lessons

At the beginning of the year, PMA students enjoy impressionistic presentations of the Great Lessons. Cosmic class follows the guidance of these lessons and the interests of the children to expand and explore the inspiration and questions provided by this experience.

The Montessori method encourages students to think BIG! For example, during the first Great Lesson, *The Coming of the Universe*, we imagine the time when our sun and planets were particles of energy flying through space. The children dive into the lessons of the Sun and Earth, learning about galaxies far away and our home solar system. The second Great Lesson, *The Timeline of Life*, presents the adaptation of living things as our Earth changes. In our weekly cosmic class we introduce expansion lessons inspired by the wonder the children have. Why did stars form? Where did the oceans come from? So many questions! We learn to what it means to measure time (autumnal equinox/seasons/months of the year/days of the week) We investigate ancient forms of life from crinoids to trilobites using

1**EXPLORE****2****EXPERIMENT****3****EXPRESS**

Independent Research

We explore science and culture through the Great Lessons.



Experiments and Observations

Class experiments are followed by recording.



Wonder with our Hands and Eyes

Imagination joined with concentration inspires expression.

Experiential learning- Science of Wonder & Action

Each work period presents opportunities to be independent and to be creative. We enjoy having time to observe and record from teacher presentations and time to use our actions to learn from experience. One of my favorite moments from the beginning of the year was our discussions on the formation of galaxies and planets. The variety and beauty is astounding! Have you ever noticed that stars come in different colors? Maybe we are discovering that some stars are actually planets!

The 3 Goals- Explore, Experiment, Express

Independent Research

This month LE Cosmic has been researching our solar system. Did you know that some planets are called Gas Giants? Other students have explored the constellations or stories about the moon for each month. Other more *experienced* LE students have ventured ahead to works that present geology and biology. Independent research fosters a personalized sense of curiosity.

Experiments and Observations

Each class period features experiments with specific materials and methods. The first classes involve understanding science equipment like flasks, beakers, and microscopes. Students take on the challenge of how to safely use these materials and how to follow the steps of an experiment. The first great lesson shows how the physical laws of the universe can be tested and observed. Have you ever wondered how clouds form and rain falls from a cloud? Try an experiment!

Express our Understanding

Cosmic circle time encourages questioning and listening in order to hear and be heard. Creative challenges (sketching plans, guided journaling, envisioning missions) blend individual concentration with personal expression. Additionally students collaborate and present group projects often spontaneously! Science always needs an audience.



Two Windows into the Cosmic Month

“In nature everything correlates. This is the method of nature. Everything fits into the plan: winds, rocks, earth, water, plants, man.” — Maria Montessori, *Citizen of the World*



The Long Black Strip - A Lesson in Humility

Cosmic students unroll a black fabric strip that lines half the school hallway. As the roll unfurls we consider the history of the universe from the cosmic beginning to the present moment. Wow! *How do we fit into this vast story?* The end of the strip reveals a pinky-wide piece of white cloth. *What's this?* It's us, all of human history! Maria Montessori created this cosmic lesson during her time in India in the 1930's. She considered it a lesson in history and humility. Children experience a sense of their place in the world, while also witnessing their connection to the universe.



Milk Jupiter - Molecular Science & Imaginary Planets

This featured experiment (one of many!) introduces students to the fundamentals of lab work. They learn how to use equipment, measure ingredients, follow steps, and observe results. The scientific principle indirectly explored is liquid surface tension and the reaction of polar and non-polar molecules. A colorful flow of food coloring on a plate of milk erupts from a drop of dish soap. *Have you ever imagined your own swirling planet?* We ended this experiment by placing a coffee filter into the colorful mixture. Ms. Rachel plans in October to declare a planetary celebration week when everyone's unique "milk planet" will hang from the ceiling. A special glowing surprise awaits! Stay tuned ;)

