HILLTOP MONTESSORI SCHOOL

COSMIC EDUCATION

The Heart of the Montessori Elementary Curriculum

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What is Cosmic Education?

". . . let us give [the child] a vision of the whole universe. The universe is an imposing reality, and an answer to all questions . . . all things are part of the universe, and are connected to each other to form one whole unity."

- Maria Montessori, *To Educate the Human Potential*

Cosmic Education is the heart of the Montessori Elementary curriculum. It is a way of centering the child in the great Cosmos by communicating essential scientific knowledge, and awakening their mind to the wonder of the universe and everything in it. Cosmic Education aims to facilitate the answers to "why" questions, and inspire more questions still, while showing that all things in the universe are interconnected, have value and purpose, and that everything must work together in harmony.

What are Great Stories?

"Great Stories, in the elementary class,
are to set the scene for the mind to begin to act."

-Mario Montessori

The Great Stories are six different stories that open the door to all areas of the curriculum, and ignite the imagination of the child. The six Great Stories are told during the couple of months of each school year, and set the foundation for the entire curricular year. Each story is told to the whole class in fable form, with attention to beautiful and interesting language, exciting the curiosity of each child.

1. **The Coming of the Universe**

The first Great Story, the Coming of the Universe, starts with the creation of the universe (the Big Bang) and ends with the creation of Earth. It opens up the door to curricular areas such as physics and earth science.

2. **The Coming of Life**

The second Great Story, the Coming of Life, emphasizes the importance of life in maintaining harmony on earth. It outlines geological, biological, and evolutionary history, introduces the Timeline of Life, and opens the door to

curricular areas like natural history and zoology, and introduces the five classes of vertebrates.

3. **The Coming of Human Beings**

The third Great Story, the Coming of Human Beings, tells of human's three gifts: the **heart** (the ability to love, build and maintain community), the **hand** (the ability to create and manipulate tools)**,** and the **brain** (the ability to think, imagine, ask questions, problem solve, and imagine). This story opens the door to curricular areas such as geometry and history, and a study of the fundamental needs of humans.

4. **The History of Writing/The Story of Communication in Signs**

The fourth Great Story, the History of Writing, also known as the Story of Communication in Signs, tells the history of written languages, and opens the door to curricular areas such as language, music, and art.

5. **The Story of Numerals**

The fifth Great Story, the Story of Numerals, tells the history of how our system of numeration came to be, and opens the door to curricular areas such as mathematics and geometry.

6. **The Great River**

The Great River is a metaphor for the bloodstream or circulatory system, and is an introduction to human physiology, and told at the end of the elementary years.

What are Key Lessons?

> "The secret of good teaching is to regard the child's intelligence as a fertile field in which seeds maybe sown, to grow under the heat of flaming imagination."
>
> - Maria Montessori, *To Educate the Human Potential*

Key Lessons are the essential presentations which follow each of the Great Stories. The include lessons in physics, chemistry, geology, biology, geometry, grammar, mathematics, and more. They are targeted lessons that only offer the most essential information, allowing children to follow their questions and curiosities to dig deeper and learn more. The details

can then be studied, researched, and explored by students within a meaningful context. As the details are fleshed out by the child, so does the understanding of the whole. Key lessons invite the child into spontaneous actives, and into work driven by interest. Students see that there is literally a universe to explore and that their syllabus is boundless.

What are the Different Curricular Areas Present in the Great Stories & Key Lessons?

Language

- Story of Alphabet
- Word Study
- The Parts of Speech
- Detailed Study of the Verb
- Sentence Analysis
- Clause Analysis
- Spoken Language
- Written Language
- Study of Style
- Literature
- Reading
- Spelling
- Handwriting

Mathematics

- The Story of Numbers
- Decimal System
- Long Multiplication and Division
- Laws of Multiplication
- Multiples, Factors, and Primes
- Divisibillity
- Common and Decimal Fractions
- Squaring and Cubing
- Square and Cube Root
- Powers of Numbers
- Numeration in Other Bases
- Signed Numbers
- Introduction to Algebra
- Ratio and Proportion
- Word Probelms
- Measurement

History

- Early Human Beings
- Human Fundamental Needs
- Early Civilizations
- Human Migration
- Linear Representation of Time
- History of Human Beings
- History of Child's Own Country

Geography

- Birth of the Universe
- Our Cosmos (Space)
- Composition of the Earth
- Attraction and Gravity
- Combining
- Nature of the Elements
- The Sun and the Earth
- The Work of Air
- The Work of Water
- Human Geography
- Economic Geography

Geometry

- Story of Geometry
- Basic Geometry
- Fundamental Concepts
- Angles and Measurement
- Lines, Polygons, Circle
- Congruence, Similarity, Equivalence
- The Pythagorean Theorem
- Euclid's Plate or Euclidean Geometry
- Area and Volume
- Tessellations
- Geometric Constructions
- Insets of Equivalence

Biology

- The Coming of Life on Earth and Timeline of Life
- Botany:
  - Fundamental Needs and Parts of Plants
  - Function Work with Vegetative and Reproductive Parts of Plants
  - Classification of the Plant Kingdom
  - Simple Classification
- Zoology:
  - Classification of Kingdom Animalia
  - Ecology
  - Five Classes of Vertebrates
- The Great River (Human Anatomy)
- Interdependency

Story Telling

The methods through which we deliver cosmic education helps to guide the child to answer their great wonderings about the universe, and all that is encompassed within it. We tell stories, like our Great Stories and stories about etymology of words or new concepts. We expand the child's environment by going outside to experience what we learn in the classroom through field trips and exploring the nature that surrounds campus. We also meet the developmental characteristics of an elementary child by allowing collaboration, igniting imagination, developing abstraction through concrete experiences, and providing chances for big work.

Uses of Charts and Timelines

Our lessons use various charts and timelines that range from impressions to facts to tangible work charts. The impressionistic charts teach a concept through an impression of some kind, like photosynthesis portrayed as workers in a factory on a leaf. The factual charts might list important dates like the lengths of the various Eons and Eras on Earth. The work charts allow children to manipulate a concept they have learned, such as shifting time zones on a chart to examine various points of sunrise and sunset for a given location.

Demonstrations and Experiments

A demonstration may involve rotating and revolving a model Earth around a mode sun so the child can understand and discover the importance of those movements that are continuously occurring. Our lessons introduce students to materials that allow them to "spontaneously abstract" through manipulation.

Materials

The tangible material is the guide and the teacher. Through the trust of the material the child discovers the truth, and, in turn, can begin to manipulate and apply concepts abstractly without the aid of material. One example of our use of materials is how we ground children in the concept of equivalence by using metal insets, which later serve as a key for their discovery of formulae for the area of various polygons by transforming them into equivalent rectangles using the metal insets.