The Lamplighter

SPEMS Monthly Parent Newsletter

"We especially need imagination in science. It is not all mathematics, nor all logic, but it is somewhat beauty and poetry."

-Maria Montessori

October 2014

Applying Montessori Principles

Inside

School Closed on Monday, Oct. 13 for Teacher In-Service

The Mathematical Mind

It is impossible to go into a Montessori environment and see the math materials without sensing the genius of Maria Montessori. She had the ability to take complex mathematical concepts and turn them into tangible materials that make mathematical abstractions appear to be nothing but a natural phenomenon. These materials are presented in a manner that shows a natural progression taking place.

Ten thousand years ago, the Sumerians were the first farmers and animal tenders. To keep track of their possessions they made tiny clay tokens, one token for each item they possessed. Around 5000 B.C., the tokens had simple cone shape forms for grains and discs for sheep. Later, as the Sumerians grew into an urban culture, they made more complex tokens – bent coils, rhomboids, and miniature models of tools, animals and vessels. Each token was used to count only one kind of thing.

When the Sumerians stored a group of counters together in a clay envelope, they would label the outside in a concrete way. For example, if the envelope held five jars of oil it would be marked five times with the symbol for jar of oil. They did not differentiate the number for objects.

It took 5,000 years for these people to realize that five jars of oil and five children were both instances of the number 5. About 3,000 B.C. they invented numerical symbols. "One" was represented by a wedge, "ten" was represented by a sphere, and the base of their numbering system was 60 (which still survives in use on our clocks). Later they counted up to 360, (which survives today as the number of degrees in a circle, or on a compass).

The example of the Sumerians demonstrates how counting evolved. First things were counted and represented concretely on a one-for-one basis. Abstract counting—using abstract symbols or Arabic

Follow me to page 2

Mathematical Mind *continued from page 1*

numbers to represent quantities—didn't appear until centuries later.

Montessori used this basic human tendency to begin with the concrete and move to the abstract while crafting her mathematics lesson materials: Initial lessons begin with simple, concrete one-for-one representations of numbers using counting rods, counters, spindles and beads. *[That's SPEMS student Brendan Robinson working with a chain of 1000 counting beads on page one.]*

It is a natural impulse of the child to count and quantify, but he can easily become confused and frustrated—and even "turned off" by mathematics, if abstract concepts are introduced before concrete concepts are fully understood and integrated.

Montessori believed that children did not need to be surrounded by "math lessons" to gain mathematical skills. Rather, she asserted that a classroom only needed to supply the means for children to explore the world—and to explore things and their relationships in a mathematical way. In her book, *The Absorbent Mind*, Montessori referred to this "impulse to produce order out of disorder" as *"the mathematical mind."* She admitted borrowing the phrase from the French philosopher and mathematician *Blaise Pascal*, who himself asserted *"a man's mind [is] mathematical by nature."*

So, in the Montessori classroom, we must give each child the opportunity to use his or her natural, mathematical mind. First we must allow the child the chance to investigate, to measure, to be exact, to manipulate concrete objects and to explore the relationships between objects.

It is through the use and manipulation of concrete objects that his or her mind is naturally led to abstraction. Counting all the beads in a thousand-bead chain is time consuming. But this naturally leads the child to relate one thousand as equal to ten hundreds of beads. Next he can visually relate that large concrete number of beads to the abstract numerical representation of "1,000."

The foundation of *the mathematical mind* is also built through practical life activities and through other sensorial materials. In practical life lessons, the child learns strategies for work—how to work neatly and precisely, how to work in a specific order and sequence, and how to attend to details. These activities prepare a child for the exactness and the logical order required for mathematics. The exercises are task oriented rather than goal oriented to assist the child in developing a research attitude and a process emphasis toward work.

—In the sensorial activities, the child identifies and distinguishes sensory impressions. Then she is shown how to match and then to grade sets of objects, in an order from the "most" to the "least" of a certain attribute. These lessons with the sensorial materials encourage the child to make observations. Using the visual sense, the child begins to notice similarities and differences, which leads to putting things into categories based on perceptions and awareness of relationships. After a classification system is developed, the child can relate new information to what is already known and so create an ordered structure of knowledge.

The sensorial materials also aid in the development of *the mathematical mind* by allowing observation of error. Through the observation and manipulation of the materials, a child comes to develop critical evaluation of his work. Math is experienced sensorially when the child explores dimensions with the pink tower or brown stair and geometric forms with solid or plane figures from the geometric cabinet.

The sequence of the Montessori math curriculum is a retracing of the development of *the mathematical mind*. Numbers and calculations were created to fulfill a function unique to humans. Very early on, people wanted to know how much they possessed. There possessions were few so they only needed a few numbers. As the numeration system increased with the addition of possessions, the function of addition was invented. When things became lost or broken, the mental process of subtraction was invented. With the coming of civilization and the possession of great things, the process of repetitive counting into a short hand method called multiplication developed. When land or animals had to be shared, the model for division was created and met.

The mathematical mind was developed by practical life exercises and then later quantified into mathematics as a shorthand or quick way to represent these experiences. Work in mathematics is profoundly satisfying to children because the work corresponds with the way their minds naturally work.

Maria Montessori states …and I love this quote: "We especially need imagination in science. It is not all mathematics, nor all logic, but it is somewhat beauty and poetry."

Happiness and joy is what we get to witness when we observe a child making these amazing connections with numbers and quantities. Unbeknownst to them, their minds are laying a strong foundation for understanding the beauty and poetry found within the science of arithmetic.

CALENDAR

Choral Evensong & Blessing of Animals happens Oct. 5

A choral evensong service, including a blessing of animals, will be held at *St. Paul's Episcopal Church* on Sunday, Oct. 5 at 4 p.m.

Donor Appreciation Event set for Oct. 11

SPEMS will honor donors with a special appreciation event on Saturday, Oct. 11, at *The Bishop Jones Center*.

Purchase Your SPEMS Polo Shirts by Oct. 10

SPEMS student Polo shirts are available for purchase in royal. Stop by the front desk or download the order form emailed to you this Thursday's parent weekly email. Cost $12 each, chase/checks to SPEMS.

SPEMS Parent Group kick-off on Oct. 17

If you are interested in pioneering an off-campus community event or just want to know how you can volunteer at the school, join us in the Parish Hall on Friday, Oct. 17, from 8:30 a.m. to 9:30 a.m.

Our goal is to have parent representation from each classroom to aid school-wide parent communication.

News from Upper Elementary

Upper Elementary students have been studying various writing genres and chose Japanese *Haiku* poetry to express their visions for peace at our recent *Peace Day Celebration*. [You can see photos from the celebration in our Photo Gallery on page 4.]

Here are a few examples of our students' terrific poetry work:

Desert is growing
Hot sand spreading far and wide
No water in desert.
-Diego

Full moon shines brightly
Over people of the Earth
Sleeping safe and sound
-Anon

The ringtone of life
Sounds, beats, melodies.
Lovely. Creativity.
-Armando

News from the Primary classroom

We have had a full and exciting month of discovery and getting to know one another!

Our primary focus has been on *grace and courtesy*. To this end, the children have been practicing *patience*, *assisting their peers* and implementing their *table manners* during snack and lunch.

Each child is also learning the importance of *personal space* during our daily group and individual work times.

The children are also working on sequencing the days of the week and the months of the year. Ask your child to share the days of the week song with you!

October should prove to be just as exciting as we learn more about fall and discover some exciting facts about pumpkins!

As always thank you for sharing your children with us.

--Ms. Kristin and Ms. Ceci

Parents enjoyed our Montessori *'Journey & Discovery'* event

About 20 parents attended our *Journey & Discovery* classroom exploration event held on Saturday morning, Sept. 13.

At the event, parents learned how differently a Montessori classroom operates from a traditional classroom. They made a silent journey through all the classrooms and had opportunities to use the materials themselves.

After the event, parents shared their overall impressions of the experience:

"I found this to be, quite frankly, a sacred experience. The silence was so powerful; and imagining the children growing and learning in the space was so beautiful."

—Primary parent

"I loved it! The 'meditation walking' through the rooms set the tone and made it an experience that changed me. I am deeply moved by the peaceful environment, attention to detail and sense of purpose and focus created by the work.

—Primary parent

Peace Day 2014 Photo Gallery

Photos by Kate Terrell

***Grayson Street Jazz* on Oct. 16**

First Grayson Street Jazz event will take place at Lambermont on, Thursday, Oct. 16. *GSJ* is a neighborhood collaboration to raise money and awareness for *St. Paul's Episcopal Montessori School* that celebrates our culture, music and community. Come join the fun on Oct. 16. Downbeat is at 7 p.m.

Grayson Street Jazz, October

Grayson Street Jazz

Grayson Street Jazz, October 16

Located in the Historic Government Hill District, Grayson Street Jazz has become a neighborhood collaboration to raise money and awareness for St Paul's Episcopal M...

View on www.eventbrite.com Preview by Yahoo