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Math rationale

There are several reasons that we teach math to children. One of them is so that we meet the children’s natural tendency to structure, order and classify concepts and ideas. Humans have an innate tendency to sort and assemble items and they often wonder how systems work. Math helps children with that. It helps them see the big picture and engages the left side of the brain. Certain math concepts having to do with spatial awareness also use the right brain and therefore help the child integrate both sides of the brain, which in turns leads the child to have a richer more meaningful concept of life and the way things are sequenced in nature, in their life and in almost anything they find interesting. There are so many ways to cover the math curriculum in the Montessori classroom. For example, the classifying cards in cultural studies can be considered math since it deals with sequence, order and sorting.

In the book The Absorbent Mind, Maria comments on a concept developed by Pascal. He said that “math’s mind was mathematical by nature, and that knowledge and process came from accurate observation.” (p. 169) Maria definitely agreed with this concept because she spent most of her life observing children and coming up to conclusions based on her observations. She further explains that just like there is a precise order to words and language, there is an order in the mind of humans constantly sorting and classifying all information it receives.

Before a student enters a Montessori classroom, the preparation that will help them to utilize the vast array of math materials is the exposure to sensorial awareness in
the primary classroom. They learn visual tactile discrimination in the primary setting. Materials in the primary classroom, specifically in the sensorial area, develop the child’s sense of ordering, categorizing and 1 to 1 correspondence. Working in practical life as well as sensorial gives the child confidence and independence, which will help prepare them for the elementary classroom.

The Montessori Math program is sequenced in an orderly fashion, from left to right and top to bottom on the shelves. All materials are placed within very easy access to the children, usually waist high and no higher. The program is organized according to color, and the biggest organizational technique that stands out in the entire Montessori curriculum is the constant state of taking the child from the concrete to the abstract ways of learning. This is always a bit of a challenge to people that were taught traditionally. For example, I was taught math in an abstract setting so now the details I am getting are filling in the gaps. It’s great to have those AHA! Moments even now as an adult.

Montessori gives the child the opportunity to discover their own answers and to lead themselves to their own conclusions. Every lesson is designed to help the children gain confidence and independence while learning how to incorporate a new skill.

Maria said that if we leave children alone to do their own thing, we leave them confidently to their own intelligence. They naturally do what’s right and appropriate for their stage of development. She further explains that, “deeply instructive is the revelation made to us by the children, that “the intelligence” is the key which reveals the secrets of their formation, and is the actual means of their internal construction.” (p. 153)

It is so refreshing that Maria looked at the child as being naturally intelligent. Her whole
approach focused on following the child and letting them direct and orchestrate their own learning habits and styles.

She says that the first phase of intellectual development is related to time. Just like the example of Brain gyms-students understand data at a faster rate than they previously had. She asserts that order is the key to this faster development. This is apparent in almost all the Montessori materials as well as the way the room ought to appear to facilitate order for the children. Before this training, I would have never considered how important order is, although I would perceive the disorder in my life as annoying or irritating.

I now see that in Maria’s mind, she may think that disorder holds us back and finding order helps deepen understanding of things, and further develop the human beings natural tendency to classify and arrange items. For the purposes of running a classroom, this concept is definitely useful. For example she mentioned an interesting concept in the reading. I will make my own analogy of writing a journal. She would probably find a journal which had detailed information regarding dates, times, order and sequence of activities much more useful than anecdotal writings all the time.

Children who are taught in an orderly fashion can then take the information they receive and observe objects, distinguish their identity, and differentiate between other objects easier. She further explains in the intelligence chapter that often times genius moments are found in the most mundane and common occurrences of life. She mentioned some of the inventors from the past and explained that many of them came to their theories by asking questions of common everyday occurrences. For example Newton asked why an apple fell and came up with the concept of gravity. According to
some of the readings I’ve done on Einstein he had figured out what he was going to wear for several weeks or possibly years in advance. He did this to establish order and free his mind to think of bigger ideas. He also worked in a factory and did sorting types of mundane activities. Later it became known that he came up with a lot of his theories and ideas during these times. This story can definitely be useful to tell a child who says he/she is bored!

Some of the basic tenets of the Montessori style of teaching math are concrete to abstract. For example we start the children off with numbers under 10 and work them up to bigger numbers. Also we start them out with the Golden Bead set and move them towards abstraction by going from numbers of beads to the Stamp Game. In the Stamp Game there is an actual number on the stamp. Finally towards the end of the term, students are writing problems abstractly and are very proud because of the progress each work had upon each other at various points. I am sure that students must have intermittent rapid and slower growth rates in their math just like in other things.

Repetition through variety is another tenet. This is exemplified in the Snake Games, Bead Frames, Strip Boards and Charts. Each one of these works can focus on addition, subtraction, multiplication and division at various times and often times overlap each other just for repetition sake and to add variety to the child’s understanding of these important concepts. This shows the student that they don’t have to be bored to learn math.

Another tenet I will talk about is going from whole concepts to parts. This is shown in Geometric Hierarchy of Numbers, Golden Beads, and Bank Games. Each of these works, along with several others, can be introduced to cover a broad spectrum of
concepts and then once the introductions have been made, each can be broken down and various operations can be applied to each one. For example in the Hierarchy of Numbers, it is an introduction to the concept of the millions and from then on the child can feel confident hearing the word million, seeing and recalling this concept in subsequent works.

I will end on this note, explained by none other than Maria Montessori. “An idea cannot enter triumphantly into the consciousness if it is not accompanied by faith.” (p 179) To me this statement says a lot. It basically explains how I feel about the Montessori curriculum on the whole but for the purposes of math, I think it could also mean that it is possible to learn math and really enjoy it. I think that what has struck me the most in the math curriculum is the desire I have to make math fun for all students—boys and girls. I have not had much experience in teaching math to elementary students but I am so happy that I have a wonderful curriculum and classroom to teach math.

I am going to strive to do my best for all the students. I know that historically boys have done better in math but I hope not to have that trend in my classroom. Since one of the main goals of the elementary classroom is to give the students an experiential experience of math, I want them to leave confident about their futures in math and feel that it is possible to do anything they want to with hard work. I will make sure that students understand this important part of math, learning and life. Good things come with hard work and that nothing is impossible. Even though math was not difficult for me growing up, it definitely was not exciting and I am so happy to be excited to teach math to my students using the Montessori method of teaching. I think that this style of teaching really reaches the heart of the child, which inevitably is where we all want to be.
Bibliography

