Spring
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OREGON MONTESSORI ASSOCIATION

Forza Vitale

(noun)

1. *A Stream or force that exalts life onto something. Vital energy force and spiritual phenomenon, beyond biological aspects*
2. *The spirit or energy that animates living creatures; the soul*

In this edition:

MATHEMATICS: A LANGUAGE FOR LIFE

Tammy O'Kinsella

The last 2 of the five Great Lessons in the Montessori Elementary curricula are stories about human achievements. "The Story of Communication in Signs" gives a fanciful and engaging history of the development of human language. What follows this is an equally fascinating tale about "The Story of Numbers." The language of Mathematics is a particular branch of language stimulated by the human attraction to order, pattern, laws, and exactness. It is a dynamic language created and continually expanded. It is the language behind inventions and discoveries of humans as they have sought to meet their material and spiritual needs over the ages. There are parallels to how mathematics is fostered in Montessori Schools and how humans learn language from infancy.

It goes without saying that the push towards independence is strong and begins at infancy. This drive includes tremendous effort towards physical and intellectual independence. The activities of babies that are prerequisites to language development are the preliminaries to intellectual independence. Dr. Montessori determined that children's potential for learning language is strongest from birth to age 6 years old. In Montessori classrooms, the order for teaching Mathematics is experience first before any language or symbols are introduced. Just as a young child sees an apple, feels its roundness and temperature, rolls it around, tastes it, watches his parents and siblings eat it, and hears others name it "apple" before he ever attempts to say this word, children in Montessori classrooms have mathematical experiences with thoughtfully created concrete materials. This experience precedes the introduction of language or symbols associated with these materials. They are not expected to name the mathematical constructs these materials embody until they have had a long period of experience, repetition, and practice. Language is eventually given, however, because language is what enables the child to label the experience, to create an abstraction from the experience, and carry it with him in his mind.

When a child is learning language, he starts out by producing approximations of sounds. These can be very endearing, but also loud and repetitive, sometimes causing difficulty for parents in public places like libraries, restaurants, and church services. However, they are necessary. The child soon begins saying single words or approximations of them along with using gestures—da, ma, no, ball, gain (for again), and, in one

alarming case, fu__ (for truck!). After gaining enough vocabulary, the child begins saying phrases or short sentences which will gradually increase in length with more correct grammar and syntax.

Similarly, the child begins using mathematical language, or counting, by using 1 to 1 correspondence. This is something that can be encouraged by parents when their children are very young. They can pass out spoons to set the table—"one for daddy, one for mommy, one for sissy...." Next the child begins using one-word constructs for numbers. In the Primary classroom, these are offered with sandpaper numerals separate from any concrete quantity which are later associated with the quantity in a series of lessons with Number Rods and Cards. Eventually, after a whole lot of other lessons and repetitions, the child is producing mathematical phrases or sentences such as 7 + 3 = 10, 9 - 6 = 3, 5 x 3 = 15, during their primary years.

It may surprise some to hear that Dr. Montessori determined that the best period for children to learn math facts is between 2 1/2 and 6 years old. This is the case because at this age children are capable of learning vocabulary at the highest rate and are strongly and naturally attracted to learning vocabulary; math facts are absorbed and utilized in the same way as new words.

One of the difficulties with children getting enough exposure to the materials and time to associate the language that will help them hold the experience in their memory, is the age of entry into the classroom. Because it takes time to explore all these materials, if they enter later than 2 1/2 to 3 years old the time to receive presentations on the variety of mathematical materials is shortened. This is problematic because these presentations allow the child to practice with materials and provide the experiences to which they can then then attach the mathematical language.

Once math facts are put to memory, there is so much more that can happen when the child enters the elementary classroom. Developmentally, the child is now wanting to reason, draw conclusions, and create further abstractions from the facts he has carried with him into this new environment. Steven Hughes, a neuroscientist who is a strong proponent of the Montessori approach to education, said that working memory is the foundation of creativity. This is the ability to hold something in one's mind while thinking about another way of doing it. This begins happening in the lower elementary classroom very noticeably with the mathematical materials.

FOOD FOR THOUGHT

MATH FACTS

Cohen & Rubinsten (2017) were interested in exploring the relationship between cognitive, personal and environmental factors that influence math anxiety. In an study developed with 30 sixth graders they tried to find how the children's MA was affected by mother's math anxiety and maternal behaviors, their own arithmetic skills and intrinsic math motivation… you can read more here (https://goo.gl/RtKFAU) but first, a spoiler: the authors believe that their study helps provide preliminary evidence of intergenerational transmission of math anxiety.

Did you know?

Mathematics Anxiety or MA is an actual term used by researchers… it's defined as a "feeling of tension and anxiety that interferes with the manipulation of numbers and the solving of math problems in ordinary life and academic contexts."

The level of MA can be measured with the Abbreviated Math Anxiety Scale (AMAS)

Hopko, Mahadevan, Bare and Hunt (2003)

PMID: 12801189

Bedtime Math is a non for-profit organization that develops materials to support adults and children connect around fun math facts. Their "Bedtime Math" books have great reviews and their website includes resources for educators (family engagement initiatives), librarians and parents.

www.bedtimemath.org

I'VE BEEN MONTESSORIZED

Interview with Colin Fogarty

Late in February this year, while attending a fundraiser event, the MC said, "Good evening everyone, my name is Colin Fogarty and I've been Montessorized". When I contacted him for this interview and explained to him that he was the inspiration for a new section in our Forza, he made sure to clarify that the term wasn't his invention. It has been passed down to him by his wife, who originally heard it from Shannon Helfrich, her trainer.

During our first meeting we agreed that not only we would make sure to credit the original source but also that we were giving the term a new twist, Montessoriz-ED: The conversation between OMA's ED and a heartfelt Montessorian by proxy.

Here is how the conversation went -a condensed and edited transcript- of a discussion we had at Smith Teamaker.

ED: **Why did you identify with the term Montessorized?**

Colin: I used to work in journalism, where I had to remain neutral in my opinions. I used to say that there are two things in which I truly believe in, one is public radio, the other is Montessori Education. It fits with everything I believe and so, I felt like I became part of the movement, with a fundamental understanding of what education can be and that kind of radical change in thinking takes a long time to set.

ED: **What do you think that Montessori Education and Public Radio have in common?**

Colin: In radio, every story is a lesson, and in many ways there is a way, the most scientifically effective way, of presenting the lesson. The respect that you have as a journalist for the listeners is the same kind of respect that a teacher would have for the child.

ED: **If you were a Montessori Lesson, which lesson would you be?**

Colin: My answer would be a trinomial cube. It's not necessarily anything in particular about me but I would say that I went through the Silent Journey, and it was powerful. Nothing struck me more than taking the actual time, quietly, to explore the trinomial cube. I was just blown away by the layers and the idea that you could work with it at a very young age and come back to it, several years later and get something entirely new from it. To see that the work that you did when you were three affects the way you understand it when you are older.

ED: **What do you want to be when you grow up?**

Colin: My answer to that would be "A Storyteller", but the more complicated question would be, do we ever grow up? You can see some pretty immature behavior by adults, so, we only evolve and change.

ED: **If a Montessori child, from any part of the world, walks into this tea house, now; what do you think the child would say, and why?**

Colin: What I would hope, and I would expect a Montessori child to say coming into anywhere is, not necessarily a statement but a question, an openness to be curious. I'm not one to condemn the public education system, I went to catholic school, which is different but fundamentally the same. I know some Montessorians feel that way, so I won't say that Montessori kids are so much better, because I've seen several great kids that went to traditional school. I think a Montessori kid would be much more prone to ask questions, to want to learn. I see that with our own children, who want to engage. Our older son is now in public high school, he had to go through a transition period, not with his teachers but with his fellow students. He was much more engaged and interested with the work than his classmates.

ED: **You became montessorized before having children. Do you think that this engagement with Montessori Education modified what you would have done as a parent? Would you have parented differently if you wouldn't have been montessorized?**

Colin: Absolutely! It affected everything we did, from the way we set up the house to when my wife stayed home for some time with the children. With what we gave them to play with, their education started immediately. Having said that, things are more complicated than that. There are things where I fell back on my own upbringing. Even today, when they aren't in primary anymore, it influences what we do. There is the respect for them as individuals, the fact that we are there to help them make decisions.

It absolutely, completely shaped the way we raised them.

ED: I have heard from different Montessori communities their hope for more community outreach, to open up to the world. From your montessorized perspective, if the Montessori community were to deliberately open up to the extended community, what would your advice be?

Colin: This comes from my experience as a story teller and a communicator, and that is that Montessorians (and they know this, I'm not saying something new) need to communicate what they do better. It's easy to get caught up in the details, and to get caught up in the "we don't want to say this", the idea that simplifying it, is dumbing it down. I think that the opposite is true, nothing is so complicated that you can't explain it in plain language so that people would understand. It may take a while, but I think there needs to be a commitment to explaining to someone in an accessible language, so as to demystify it.

ED: What do you think Montessorians are communicating now?

Colin: I don't want to say that Montessorians are saying something in a particular way. However, I can say that the way people are taking it, the way they perceive Montessori, is that it's inaccessible. I know this from my own work, it's really easy to fall back on jargon, to not transform your message with truly accessible language. I learned this on public radio. This is attainable. You can explain really complicated things in an easy way, that will make people resonate.

There is a psychological term called "schema", which is basically a frame of reference. So when you say "Ford motor company", there is a whole array of information. Instantly, within seconds you have images of trucks, and Henry Ford, an assembly line and much more that is associated with that brand. It's more than a brand, it's a frame of reference, it's a whole schema. People understand that. So, if you want them to understand something different, but similar, you have to blend in, meet people where they are and find something else that reaches into that frame of reference. That's not dumbing it down, that's not undermining your message, that's branding the message in a way that is accessible and respectful.

ED: Which advice would you give now to the 36-year-old Colin?

Colin: Which advice I would give to myself, when I was 36 years old? "Chill out man", that's my advice. Particularly with parenting. I learned, or rather my older son taught me, that I don't need to worry so much about

the details. I made that transition where I say, "I'm going to give you advice and is up to you to follow it." When he was young, I certainly was on top of everything, but then I look back and think "come on, just let him be."

ED: As the Executive Director of the amazing Confluence Project, what final message do you have for our members?

Colin: I would let them know that Confluence has an education program that connects students and teachers with Native artists and educators to do meaningful projects about the Columbia River system, It's call Confluence in the Classroom Education Program and I'm sure that it will be interesting for many teachers in the community.

Next edition: Summer 2018

"Families, Teachers and Children"

Submit your articles to info@oregonmontessori.org