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Montessori Monthly

Montessori and the Study of Mathematics

Article source: Excerpts selected by Christine Krupp from "Montessori and the Study of Mathematics" by Tim Seldin

Dr. Montessori would always point out in her talks to teachers that the whole of our civilization is based upon mathematics. All of our science and technology—from architecture to space flight—depend on mathematical calculations. The hand-held calculator and personal computer, great miracles that we now take for granted, are totally mathematical devices.

Scientific research, business, and government agencies all rely upon the collection and interpretation of data and statistics. Art and music have direct links to mathematics. We use, or could profitably use, mathematics in almost every aspect of our everyday lives to some

degree. And yet, mathematics is the one area of the traditional curriculum with which most students experience difficulty. It is as if only a gifted few possess the

Reading and writing in English provides different challenges. Many words in our language (commonly called "sight words") are not phonetic and must be simply learned. For a time, educators gravitated towards teaching reading only through a whole language approach - looking at context and focusing on meaning rather than learning phonetic sounds.

The latest research, from a study done by the National Reading Panel (National Institute of Child Health and Human Development, 2001) concluded that straightforward phonetic instruction is more effective than embedded phonics (where a teacher only points out a phonetic sound in the context of a story). In the Montessori method, phonics are most definitely taught, but there is also a focus on context, meaning, and comprehension. This blending of phonics and whole language has proven to be extremely effective.

It's important as educators and parents (and both), that we understand the mechanics behind the skill of learning a written language. The more we understand, the better able we are when

intelligence or special talent to see beauty in the study of mathematics.



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This view is illogical. Modern civilization could never have come about if the study of mathematics was unnatural to the human mind. It is perfectly natural for men and women to count and measure, and this capacity for exactness in observation corresponds to a regularity in natural phenomena, and leads to the discovery of natural laws and thus to the power to control the environment.

When we think, we work upon the images that we receive from the senses which observe the world. These images are our 'raw material'. To construct our

knowledge we have two tools: word-language and number-language. Numbers are symbols that help us to think, just as words do. They are specialists because they deal only with quantities and sizes, but this does not make them any more

mysterious or incomprehensible than words that describe other aspects and qualities of objects that we perceive. The secret is that ability to sense the direct connection between the language of mathematics and one's own direct experience. If the study of mathematics is

there are problems that need to be addressed. Remembering that each child will follow their own timetable can be very helpful. For some children, reading does come almost as naturally as speaking. For others, it is a struggle. Focusing on phonics, providing quality children's books, and increasing the kinds of words we use in spoken language can all boost a child's reading power.

Have You Ever Wanted to Know More About the History of MSCU and How It Is Operated?

History of MSCU

1962 -- The Montessori School of Champaign-Urbana is founded in 1962 as an outgrowth of a parent study group.

The first site was a small building on what is now the site of the University of Illinois State Farm Center. Subsequently the school rented space in churches and an old school building in Champaign. At one time, the school operated at 3 different sites.

1970 -- The Montessori Society purchases the Perkins School from Nellie Perkins at 1112 Broadmoor Drive in Champaign. By 1977, all classes are consolidated at the Broadmoor site.

1984 -- The Montessori Society purchases property at our present site in Savoy and an eight thousand-square-foot metal building with brick facade was constructed. The new school opens in August 1984 with 4 primary classes, a kindergarten, first and second grade classes and a full day care program. An afternoon preschool class was added the following year. In 1987 the first and second grade classes were discontinued and replaced by additional primary rooms.

begun early enough, it can be a fascinating occupation.



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The great mathematician and philosopher, Pascal, suggested that human intelligence is naturally mathematical. Montessori believed that if the intellect is allowed to develop naturally, it will inevitably turn at the time of inner sensitivity to counting and measurement. We see this happen in the Children House level as the youngest form their first conception of quantity and symbols, and go on with enthusiasm

to explore the decimal system and arithmetical operations with the bead material. Here the goal is to provide a concrete representation of abstraction, allowing the child to develop a clear inner image of concepts in mathematics, such as how big is a thousand, what is meant by the 'hundreds' column, and what is taking place when we divide one number by another. This is consistent with everything that we know about the ways young children think and learn.

1994 -- The building is expanded with the construction of a 2,000-square-foot, multipurpose room. By 2000, MSCU offers six primary classes, two kindergarten enrichment classes, two extended day programs and a wrap-around child care program.

2012 -- The school celebrates its 50th anniversary. A Parent-Toddler Community is added and the extended day program expanded.

2014 -- MSCU purchases the building at 303 Burwash, remodeling it to accommodate a full elementary program consisting of an inaugural first through third grade class, with plans to expand upwards to 6th grade as the students grow.

The School currently holds the highest level of membership with the American Montessori Society and is registered with the Illinois State Board of Education.

Our Organizational Structure

The Montessori School of Champaign-Urbana, founded in 1962, is owned by the Montessori Society of Champaign-Urbana. The Society is a not-for-profit corporation composed primarily of the parents whose children are enrolled in the school; it is non-discriminatory in its membership and the school is non-discriminatory in its enrollment and hiring practices.

Your enrollment fees at the beginning of the year pay, in part, for your membership in the Society; all current MSCU families are members of the Society and, as a family unit, are able to impact the direction of the school through either service as an elected

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The foundation laid in the primary years is only the first stage of a spiraling process that takes many years to mature. Until children can think at a high level of abstraction, which rarely occurs before early adolescence, they depend upon concrete experience and practice over a number of years before mathematical concepts begin to take firm root.

Naturally a child cannot go to college still depending on concrete apparatus to perform

computations, although they quite possibly will depend on a calculator which can be used with little or no understanding of what's taking place mathematically. However, our goal is to help our children form a clear understanding, beginning with very concrete materials and moving in carefully planned steps to greater levels of abstraction. They must work with these materials,

repeating and reviewing them continually until the knowledge becomes second nature and is absorbed into their unconscious mind. The end result is the 'passage into abstraction', at which time the child can routinely solve problems with paper and pencil.

member of the Board of Directors or through voting for members of the Board of Directors.

The Board of Directors of the Montessori Society, is the governing and policy-making body of the school. It is composed of ten volunteer members. Nine are elected by the Society from its membership and the treasurer is appointed by the Board. Board members serve three-year terms. Three new members are elected each year. Our board is filled with professionals with varied areas of expertise. We have those with experience in finance, education, business, and law.

We are currently looking for possible candidates to fill one current vacancy as well as three vacancies that will occur this spring. An email with specifics will be sent in the coming weeks, which will outline the process for prospective board members. We hope you'll consider volunteering for this very important position and will add to our long history of supportive, respectful, kind, child-led education in the spirit of Dr. Maria Montessori.

MONTESSORI EVENTS CALENDAR

Feb. 26-March 2 Montessori Education Week

Saturday, March 2 Read Across America, 10:00am-1:00pm Lincoln Square Mall,

Monday, March 18-Friday, March 22 Spring Break, Child Care Only

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It has been said that either we find mathematics elegant in its logic, or terribly confusing. Our goal is at least to avoid the latter, and attempt to lead as many

students as possible to discover that the first is indeed correct.



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