

# **The Integrated Montessori Curriculum**

By Tim Seldin

Dr. Maria Montessori's research led her to conclude that intelligence is not rare among human beings. It manifests itself in the natural spontaneous curiosity of the young child from birth.

Montessori observed that when children grow up in an environment that is intellectually and artistically alive, warm, and encouraging, they will spontaneously ask questions, investigate, create, and explore new ideas. She found that children, especially when they are very young, are actually quite capable of absorbing information, concepts and skills from their surroundings and peers almost through osmosis.

She argued that learning can, and should, be a relaxed, comfortable, natural process. The secret is to pay attention to the hidden nature of the child at a given stage of development, and to design an environment at home and school in which they will begin to fulfill their innate human potential.

Montessori as an educational approach is not designed simply to teach children basic skills and information. In addition to becoming culturally literate, children need to learn to trust their own ability to think and solve problems independently.

Montessori encourages students to do their own research, analyze what they have found, and come to their own conclusions. The goal is to lead students to think for themselves and become actively engaged in the learning process.

Rather than give students the right answers, Montessori teachers tend to ask the right questions and lead them to discover the answers for themselves. Learning becomes its own reward, and each success fuels a desire to discover even more.

Montessori found that at every age level, students learn in different ways at different rates. Many learn much more effectively from direct hands-on experience than from studying a textbook or listening to a teacher's explanations. But all students respond to careful coaching, with plenty of time to practice and apply new skills and knowledge. Like the rest of us, children tend to learn through trial, error, and discovery.

Montessori students learn not to be afraid of making mistakes. They quickly find that few things in life come easily, and they can try again without fear of embarrassment.

## **The Montessori Curriculum Integrates Knowledge**

The Montessori curriculum is organized as an inclined spiral plane of integrated studies, rather than a traditional model in which the curriculum is compartmentalized into separate subjects, with given topics considered only once at a given grade level. Lessons are introduced simply and concretely in the early years and are reintroduced several times over the years at increasing degrees of abstraction and complexity.

The Montessori course of study is an integrated thematic approach that ties the separate disciplines of the curriculum together into studies of the physical universe, the world of nature, and the human experience.

Literature, the arts, history, social issues, civics, economics, science and the study of technology all complement one another in the Montessori curriculum. This integrated approach is one of Montessori's great strengths. As an example, when elementary Montessori students study Africa, they would look at the physical geography, climate, ecology, natural resources, and the ways in which people have adapted to their environment: food, shelter, transportation, clothing, family life, and traditional cultures. They might read African folk tales, study about the great African civilizations, study endangered species, create African masks and traditional instruments, make African block print tee shirts in art, learn some Swahili, study dance in music, and prepare some typical means from various African cultures. Guest speakers, performers, and friends of the school help to make a field of study come alive through their memories, talents, and personal experience.

### **Learning the Skills of Everyday Life in an Atmosphere Of Kindness, Community, and Respect**

Success in school is directly tied to the degree to which children believe that they are capable and independent human beings, if they knew the words, even very young children would ask: "Help me learn to do it for myself."

As we allow students to develop a meaningful degree of independence and self-discipline, we also set a pattern for a lifetime of good work habits and a sense of responsibility. In Montessori, students are taught to take pride in their work.

Independence does not come automatically as we grow older; it must be learned. In Montessori, even very small children can learn how to tie their own shoes and pour their own milk. At first, shoe laces turn into knots and milk ends up on the floor. However, with practice, skills are mastered and the young child beams with pride. To experience this kind of success at such an early age is to build up a self-image as a successful person and leads the child to approach the next task with confidence.

As they get older, Montessori students learn all sorts of everyday living skills, from cleaning, cooking, and sewing to first aid and balancing a checkbook. They plan parties, learn how to decorate a room, arrange flowers, garden, and do simple household repairs. Montessori builds many opportunities into the curriculum for students to gain hands-on experience.

Learning how to work and play together with others in a peaceful and caring community is perhaps the most critical life skill that Montessori teaches. Everyday kindness and courtesy are vital practical-life skills. Montessori students come to understand and accept that we all have responsibilities to other people. They learn how to handle the new situations that they will face as they become increasingly independent. Montessori students develop a clear sense of values and social conscience. Montessori consciously teaches students everyday ethics and interpersonal skills from the beginning. Even the youngest child is treated with dignity and respect.

Montessori schools are intended to be close-knit communities of people living and learning together in an atmosphere of warmth, safety, kindness, and mutual respect. Teachers become mentors and friends. Students learn to value the different backgrounds and interests of their classmates.

Parents play a vital role in the development of community in Montessori schools. Through their presence at school as volunteers and through a wide range of social events and celebrations, students get to know the families of their friends and grow up with a sense of being part of an extended community. One of our common goals is to lead each of our students to explore, understand, and grow into full and active membership in the adult world.

### **A Whole-Language Approach to Reading, Composition, and Literature**

The process of learning how to read should be as painless and simple as learning how to speak.

Montessori begins by placing the youngest students in classes where the older students are already reading. All children want to “do what the big kids can do,” and as the intriguing work that absorbs the older students involves reading, there is a natural lure for the young child.

Montessori teaches basic skills phonetically, encouraging children to compose their own stories using the “movable alphabet.” Reading skills tend to develop so smoothly in Montessori that students tend to exhibit a sudden “explosion into reading,” which leaves children and their families beaming with pride.

There is typically a quick jump from reading and writing single words to sentences and stories. At this point, we begin a systematic study of the English language: vocabulary, spelling rules, and linguistics.

We begin to teach very young children the functions of grammar and sentence structure to students as young as first grade, just as they are first learning how to put words together to express themselves. This leads them to master these vital skills during a time in their lives when it is a delight, rather than a chore. Before long, they learn to write naturally and well.

During the elementary years, Montessori increasingly focuses on the development of research and composition skills. Students write every day, learning to organize increasingly complex ideas and information into well written stories, poems, reports, plays and student publications.

Finally, and most importantly, the key to our language-arts curriculum is the quality of the material our children are given to read. Instead of insipid basal readers, even very young students are introduced to first-rate children’s books and fascinating works on science, history, geography, and the arts. In an increasing number of Montessori schools, students begin the Junior Great Books program in kindergarten and literary studies continue every year thereafter.

### **Montessori Math Moves from the Concrete to the Abstract**

Students who learn math by rote often have no real understanding or ability to put their skills to use in everyday life. Learning comes more easily when they work with concrete educational materials that graphically show what is taking place in a given mathematical process.

Montessori students use hands-on learning materials that make abstract concepts clear and concrete. They can literally see and explore what is going on. This approach to teaching mathematics based on the research of Dr. Maria Montessori offers a clear and logical strategy for helping students understand and develop a sound foundation in mathematics and geometry.

As an example, consider how Montessori presents the basic concepts of the decimal system to young children. Units are represented by single one-centimeter beads, a unit of ten beads strung together. Hundreds are squares made up of ten ten-bars, and thousands are cubes made up of ten hundred-squares.

Using these concrete materials, even very young children can build and work with great numbers. "Please bring me three thousands, five hundreds, six tens, and one unit." Thus, children internalize a clear image of how mathematical processes work.

From this foundation, all of the operations in mathematics, such as the addition of quantities into the thousands, become clear and concrete, allowing the child to internalize a clear image of how the process works.

The Montessori math curriculum is based on the European tradition of "Unified Math," which has only recently been discovered by leading American educators. Unified Math introduces elementary students to the study of the fundamentals of algebra, geometry, logic, and statistics, along with the principles of arithmetic. This study continues over the years, weaving together subjects that traditional schools normally ignore until the secondary grades.

In operations concerned with measurement, geometry shows them how to perform their calculations. In operations concerned with figures, algebra gives a system of still more abstract symbols by means of which more complicated relationships can be comprehended. The calculations of area and volume, of squares and square roots are examples in which algebra, arithmetic, and geometry are all involved. For Montessori students, arithmetic, algebra, and plane and solid geometry have never been arbitrarily separated. Four- and five-year-old Montessori children can name geometric forms that most adults wouldn't recognize.

Elementary Montessori students continue to gain hands-on experience by applying math in a wide range of projects, activities, and challenges, such as graphing the daily temperature and computing the average for each month, or adjusting the quantities called for in a recipe for a larger number of people. Because children love to work outdoors, teachers try to prepare tasks that use the school grounds whenever possible. For example, using simple geometry, children can determine the height of a tree or measure the dimensions of the buildings. They prepare scale drawings, calculate area and volume, construct three-dimensional geometric models, and build scale models of historical devices and structures.

The computer is another key tool used in teaching mathematics. Students use them to help with their memorization of their basic math facts. They provide all sorts of simulations and problem-solving situations, calling on students to compete against the computer or make reasonable predictions in engaging role-playing scenarios. Students work with spreadsheets, graphs and logical analysis.

## **Montessori and International Culture Come Alive in Montessori Classrooms**

We are all members of the human family. Our roots lie in the distant past, and history is the story of our common heritage. Without a strong sense of history, we cannot begin to know how we are as individuals today. Our goal is to develop a global perspective, and the study of history and world cultures forms the cornerstone of the Montessori curriculum.

With this goal in mind, Montessori teaches history and world cultures starting as early as age three. The youngest students work with specially designed maps and begin to learn the names of the world's continents and countries. Physical geography begins in the first grade with a study of the formation of the Earth, the emergence of the oceans and atmosphere, and the evolution of life. Students learn about the world's rivers, lakes, deserts, mountain ranges, and natural resources.

Elementary students begin to study world cultures in greater depth: the customs, housing, diet, government, industry, the arts, history and dress. They learn to treasure the richness of their own cultural heritage and those of their friends.

Elementary students study the emergence of human beings during the old and new stone ages, the development of the first civilizations, and the universal needs common to all humanity. For older elementary students, the focus is respectively on early man, ancient civilizations, and early American history.

Montessori tries to present a sense of living history at every level through direct hands-on experience. Students build models of ancient tools and structures, prepare their own manuscripts, make ceremonial masks, and recreate all sorts of artifacts of the everyday life of an historical era. Experiences such as these make it easier for Montessori children to appreciate history as it is taught through books.

International studies continue at every age level in Montessori education. The curriculum integrates art, music, dance, cooking, geography, literature, and science. Children learn to prepare and enjoy dishes from all over the world. They learn the traditional folksongs and dances in music, and explore traditional folk crafts in art. In language arts, they read the traditional folk tales and research and prepare reports about the countries they are studying that year. Units of study often culminate in marvelous international holidays and festivals that serve as the high points of the school year.

Practical economics is another important element in the Montessori curriculum. Young students learn how to use money and calculate change. Older students compute the cost of a weekly meal for their class, plan a weekly budget, maintain a checkbook, organize and run holiday gift shops, sell produce they have grown, create and sell cookbooks. Students learn to recognize the value of a dollar: how long it takes to earn it, and what it can buy.

Citizenship is yet another element that weaves throughout the elementary curriculum. Students study the workings of the local, state, and federal governments and begin to follow current events. During election years, they meet candidates, discuss the issues of the day, and sometimes even volunteer in the campaign of a local candidate of their choice.

While Montessori schools are communities apart from the outside world in which children can first begin to develop their unique talents, they are also consciously connected to the local, national, and global communities. The goal is to lead each student to explore, understand, and grow into full and active membership in the adult world.

Field trips are often an integral part of Montessori programs. Students take all sorts of trips over the years to planetariums, art galleries, the zoo, museums, and many other destinations.

### **Foreign Languages**

As part of the international studies program, most Montessori schools introduce a second language to even their youngest children. The primary goal in a foreign language program is to develop conversational skills along with a deepening appreciation for the culture of the second language.

### **Hands-On Science the Montessori Way**

Science is an integral element of the Montessori curriculum. Among other things, it represents a way of life: a clear thinking approach to gathering information and problem solving.

The scope of the Montessori elementary science curriculum includes a sound introduction to botany, zoology, chemistry, physics, geology, and astronomy.

The program is designed to cultivate students' curiosity and determination to discover the truth for themselves. They learn how to observe patiently, analyze, and work at each problem.

Students engage in field trips and hands-on experiments and typically respond with enthusiasm to the process of carefully measuring, gathering data, classifying specimens, and developing a hypothesis to predict the outcome of an experiment.

Montessori does not actually separate science from the big picture of the formation of our world. Students consider the formation of the universe, development of the planet Earth, the delicate relations between living things and their physical environment, and the balance within the web of life. These great lessons integrate astronomy, the earth sciences and biology with history and geography.

One goal of the Montessori approach to science is to cultivate children's fascination with the universe and to help them develop a lifelong interest in observing nature and discovering more about the world in which they live. Children are encouraged to observe, analyze, measure, classify, experiment, and predict – and to do so with a sense of eager curiosity and wonder.

In Montessori, science lessons incorporate a balanced hands-on approach. With encouragement and a solid foundation, even very young children are ready and anxious to investigate their world, to wonder at the interdependence of living things, and to explore the ways in which the physical universe works, and to project how it all may have come to be. For example, in many Montessori schools, children in early elementary grades explore basic atomic theory and the process by which the heavier elements are fused out of hydrogen in the stars. Others

are studying advanced concepts in biology, including the systems by which scientists classify plants and animals. Some elementary classes build scale models of the solar system that stretch out a half-mile!

### **In Montessori, the Arts Are Integrated into Every Subject**

In Montessori schools, the arts are normally integrated into the rest of the curriculum. They are modes of exploring and expanding lessons that have been introduced in science, history geography, language arts, and mathematics.

For example, students might make a replica of a Grecian vase, study calligraphy and decorative writing, sculpt a dinosaur for science, create dioramas for history, construct geometric designs and solids for math, and express their feelings about a musical composition through painting.

Arts and music history and appreciation are woven throughout the history and geography curricula. Traditional folk arts are used to extend the curriculum as well. Students participate in singing, dance, and creative movement with teachers and music specialists. Students dramatic productions make other times and cultures come alive.

### **Health, Wellness, and Physical Education**

Montessori schools are very interested in helping children develop control of their fine and gross motor movements. For young children, programs will typically include dance, balance, and coordination exercises, and loosely structured cardiovascular exercise, as well as the vigorous free play that is typical on any playground.

With elementary and older students, the ideal Montessori health, physical education, and athletics program is typically very unlike that of the traditional model of “gym.” It challenges each student and adult in the school community to develop a personal program of lifelong exercise, recreation, and health management.

Many schools have limited space and facilities, but where funds and facilities are available for older students, the ideal Montessori gym offers a variety of facilities and programs, which can potentially include a room with stationary bikes and other exercise equipment designed for children, an indoor track, a basketball court, a room for aerobic dance, and perhaps even an indoor pool and tennis courts. Again, ideally, this fitness center would not be reserved for the children alone; school families would be able to use the facilities after hours, on weekends, and during school hours when it didn't interfere with student programs.

One important element in the Montessori approach to health and fitness is helping children to understand and appreciate how our bodies work and the care and feeding of a healthy human body. Students typically study diet and nutrition, hygiene, first aid, response to illness and injury, stress management, and peacefulness and mindfulness in our daily lives.

Daily exercise is an important element of a lifelong program for personal health, but instead of one program for all, students are typically helped to explore many different alternatives. Students commonly learn and practice daily stretching and exercises for balance and flexibility. Some programs introduce students to yoga, tai chi, chi

gon, or aerobic dance. Children learn that cardiovascular exercise can come from vigorous walking, jogging, biking, rowing, aerobic dance, calisthenics, using stationary exercise equipment, through actively playing field sports like soccer, or from a wide range of other enjoyable activities such as swimming, golf, or tennis. With older students, the goal is to expose students to many different possibilities, encouraging them to develop basic everyday skills and helping them to develop a personal program of daily exercise.

Tim Selden is President of The Montessori Foundation and co-author of *Celebrations of Life and The World in the Palm of Her Hand*.