

Montessori Curriculum

Math

The Montessori math curriculum is very concrete and hands-on. There's little direct instruction in math. Instead, teachers guide and counsel. This is similar to the discovery approach to math instruction, and unlike the traditional approach.

Students work with many concrete materials to learn skills and concepts. They use self-correcting manipulatives, which allow them to find and correct their own mistakes. They also use sandpaper numbers, number rods, spindle boxes, golden bead material, bead frames, fraction insets, 100 boards, and sequin boards.

Montessori math starts with concrete learning. For instance, in arithmetic, students learn the names of the numbers by identifying numerals and objects. They then move on to more abstract and complex concepts.

The content for math is divided into categories that allow the students to grasp increasingly challenging concepts. Usually, brief lessons cover these categories in a special order. However, most work is done independently or in groups and the pace of study varies between students.

The detailed curriculum is attached.

Culture and Science

The Montessori science curriculum, similar to math, is experiential. It's very concrete and hands-on, with little direct instruction. This is similar to the inquiry approach to science instruction, and unlike the expository approach. This area encompasses History, Geography, Zoology, Botany, and others. For further details, refer to the curriculum.

Inquiry

Inquiry-based science emphasizes teaching science as a way of thinking or practice, and therefore tries to get students "doing" science as much as possible – and not just "learning" it. Students still learn foundational scientific ideas and content (and build on this knowledge progressively); however, relative to expository science instruction, inquiry-based programs have students spend more time developing and executing their own experiments (empirical and theoretical). Students are frequently challenged to develop critical and scientific-thinking skills by developing their own well-reasoned hypothesis and finding ways to test those hypotheses. Projects and experiments are emphasized over textbook learning. Skills are emphasized over breadth of knowledge.

Students are rarely taught scientific subjects on their own. Instead, the Montessori science interdisciplinary focus allows students learn several subjects (scientific and non-scientific) at once. For instance, they might be given a great lesson about the beginning of the world, where they'll learn about science, history, and theology.

Students are free to explore in and out of the classroom. They learn about the world through problem-solving and trial and error.

In secondary school, some science lectures are given. There also might be some textbook learning at this level. This is especially true in high school, where provincial curricular requirements must be met.

Reading

Montessori reading is also very concrete, with little direct instruction. It concentrates primarily on the phonics approach which, however, is far more of a focus.

Phonics-intensive

Systematic-phonics programs teach young children to read by helping them to recognize and sound out the letters and syllables of words. Students are then led to blend these sounds together to sound out and recognize the whole word. While other reading programs might touch on phonetics (either incidentally or on a “when needed” basis), systematic phonics teaches phonics in a specific sequence, using extensive repetition, and direct instruction, to help readers associate specific letter patterns with their associated sounds.

In the Montessori reading curriculum, teachers take advantage of the sensitive period for reading (between the ages of three and five) during which children are more able to learn how to read. Children first learn to read (and write) through concrete material and sensory activities. For instance, they learn to trace sandpaper letters, and how to hold a pencil and control its use. This allows them to develop fine motor skills and learn through many of their senses.

When children have learned some letters, they use what’s called a “movable alphabet”. These cardboard or wooden letters allow children to construct words, phrases, and sentences.

This sets the stage for phonics: sounding out letters and joining them together to form words. Children begin to distinguish sounds, and phonetically read words, phrases, and sentences.

As part of the whole language approach, children are then given reading cards. These allow them to practice matching words with objects and pictures. There’s also a lot of focus on comprehension. Children are given special material to learn the meanings of words and sentences, as well as the basics of grammar.

After they’ve learned the basics, children are given books to read (usually non-fiction books). Often, many illustrated books about the real world are provided. Most schools also provide plenty of reading activities related to special topics of interest.

Writing

Children learn to write before reading in the Montessori education system. They start writing between the ages of three and four. During this sensitive period, they’re thought to be attracted to the order of writing, and can easily learn this skill.

Montessori writing, like reading and math, isn't taught by direct instruction. The focus is on practicing writing and doing engaging exercises.

Children first work with moveable alphabets. They then learn how to hold a pencil, practice different strokes, and learn about pencil pressure. This improves their fine motor skills, and builds up their finger and hand muscles.

Special writing exercises are also given. These allow children to realize writing is not just "making marks". This also helps them improve their handwriting. They then learn to write creatively and express themselves in unique ways.

Language Development

There are several aspects of the Montessori language curriculum. These include spoken and written language, reading, and spelling. These skills are taught together.

The Montessori classroom is designed to promote language skills. Language use is encouraged in the classroom, partly by giving students plenty of freedom to speak with their peers. Students also speak with teachers a lot. Oral language skills are refined through songs, games, poems, and stories.

In the language area of the classroom, vocabulary is enriched in many ways. Precise names are used for all objects. Object classification and matching exercises are also used to improve comprehension and vocabulary.

Students mostly move at their own pace when learning to speak, read, and write. There's no strict time frame for developing these skills, unlike in many mainstream schools. Teachers do, though, take advantage of sensitive periods for learning these skills.

Practical Life Activities

Practical life in **Montessori** is purposeful activity, develops motor control and coordination, and develops independence, concentration, and a sense of responsibility. The exercises in practical life cover two main areas of development: care of self, and care of the environment.

Most importantly, Montessori activities are tailored to children's interests and developmental needs.

1. Follow the Child – Montessori activities are self-motivated.
2. Control of Error
3. Sensory Exploration
4. Learn by Doing
5. Isolated Skills & Concepts
6. Independence
7. Concentration
8. Intrinsic Motivation

The detailed curriculum is attached.

Sensorial Activities

Montessori sensorial activities are those which refine the five senses: tactile, visual, auditory, olfactory, and gustatory. Children are particularly receptive to developing their senses from ages two through six, and it's important to give children at those ages as many sensorial experiences as possible.

Montessori sensorial materials are carefully designed. Whether purchased or handmade, they follow basic Montessori principles. They **isolate the quality** (for example, the geometric shapes introduced are the same color and only vary in shape). They have a **control of error** (for example, the child will not be able to fit all the cylinders properly into a cylinder block if one is out of place). They **prepare the child indirectly for future learning** (for example, many of the sensorial activities come with ten pieces as an indirect preparation for the decimal system).

Montessori Sensorial Lesson Sequence

- Visual – e.g. Broad Stair.
- Auditory – e.g. Sound Cylinders.
- Haptic – e.g. Rough & Smooth Boards, Thermic Bottles.
- Olfactory & Gustatory – e.g. Smelling Bottles, Tasting Bottles.
- Stereognostic – e.g. Mystery Bag.
- Visual (Geometry) – e.g. Triangle Box.

Music and Movement

Music and movement provide children with ways to express their own unique spirits. An example is letting young children explore percussion instruments such as shakers, drums, and tambourines. In the **Montessori** primary class, three-year-olds are ready for the Sound Cylinders and **Montessori** Bells.

Benefits of Montessori Education

Research shows that Montessori schools have many advantages

Uninterrupted Work Periods

One benefit of Montessori education is uninterrupted work time. Some studies show that uninterrupted work time can boost students' focus, concentration, and discipline. It can also improve soft "social" functions, such as self-control and regulation.

For instance, Jacqueline Cossentino ("Montessori Schools Help Children Exposed to Trauma," 2016) discusses how uninterrupted work time gives rise to a similar kind of heightened awareness as mindfulness meditation. Montessori research shows that it can have similar benefits on our focus and self-control.

"Deep concentration is core to both Montessori pedagogy and mindfulness practice. Just as consistent practice of meditation enables a person to become calmer, aware, and generally self-regulated when

not meditating, Dr. Montessori discovered that children who engage in deep concentration on purposeful work emerge from that state more calm, self-regulated, and with higher social competencies.”

Concrete Learning

Another Montessori advantage is concrete learning. The advantages of concrete learning are well-known. In concrete teaching students use “embodied cognition”: they learn through their minds and bodies. By using their hands to sort and work with objects, they engage many of their senses. They thus learn faster and more efficiently, often becoming more focused and engaged.

Angeline Stoll Lillard has done plenty of Montessori research in *Montessori: the Science Behind the Genius* (2005), she goes into more detail about the benefits of embodied cognition:

“There is abundant research showing that movement and cognition are closely intertwined. People represent spaces and objects more accurately, make judgments faster and more accurately, remember information better, and show superior social cognition when their movements are aligned with what they are thinking.”