

Nine Principles of Montessori Education

1. Movement and cognition are closely entwined, and movement can enhance thinking and learning.
2. Learning and well-being are improved when people have a sense of control over their lives.
3. The ability to direct one's attention in a sustained and concentrated way fosters an array of positive developments and is itself trainable.
4. People learn better when they are interested in what they are learning.
5. Tying extrinsic rewards to an activity, such as money for reading or high grades for tests, negatively impacts motivation to engage in that activity when the reward is withdrawn.
6. Collaborative arrangements can be very conducive to learning.
7. Learning situated in meaningful contexts is often deeper and richer than learning in abstract contexts.
8. Particular forms of adult interaction are associated with more optimal child outcomes.
9. Order in the environment is beneficial to children.

1. MOVEMENT AND COGNITION

The first principle is that movement and cognition are closely entwined. This observation makes sense: Our brains evolved in a world in which we move and do, not a world in which we sit at desks and consider abstractions. Dr. Montessori noted that thinking seems to be expressed by the hands before it can be put into words, an idea with which Piaget apparently concurred (Ginsburg & Oper, 1979). In small children, she said, thinking and moving are the same process. Piaget restricted this identity claim to the sensorimotor period, but, consistent with recent work in psychology, Dr. Montessori saw at least a close relationship between the two processes continuing past age 2. Based on this insight, she developed a method of education in which a great deal of object manipulation occurs. In recent years, there has been an explosion of fascinating research on the connection between movement and cognition that speaks to Dr. Montessori's ideas about movement's importance to thought. The findings imply that education should involve movement to enhance learning.

2. CHOICE

A second principle is free choice. Dr. Montessori noted that children seemed to thrive on having choice and control in their environment, and she envisioned development as a process of the child's being increasingly able to be independent in his or her environment. Although good Montessori programs impose definite limits on this freedom, Montessori children are free to make many more decisions than are children in conventional classrooms: what to work on, how long to work on it, with whom to work on it, and so on. Research in psychology suggests that more freedom and choice (within a carefully designed, ordered structure; see the "Order in Environment and Mind" section) are linked to better psychological and learning outcomes, as shown in chapter 3.

3. EXECUTIVE FUNCTION

A third principle is that the development of executive control, especially the ability to focus and sustain attention, is key to other important developments. Dr. Montessori noticed this early in the school in San Lorenzo, when a child became so engrossed with a set of Wooden Cylinders that she was able to lift the armchair in which the child was working and not disturb the child's concentration. Dr. Montessori realized that developing this ability to concentrate was associated with changes in personality that she called "normalization." This principle is new to this edition, because only in the last 10 years has research on this burgeoned both in developmental psychology and in research on the positive effects of meditative practices. These are reviewed in chapter 4.

4. INTEREST

A fourth principle is that the best learning occurs in contexts of interest. Interest can be more personal, as when an individual has an abiding interest in ladybugs or dogs that seems to come from within, or it can be situational, an interest that would be engendered in many people exposed to such events and activities. Dr. Montessori created situational interest in part by designing materials with which children seemed to want to interact. She also trained Montessori teachers to give lessons in a manner that would inspire children, for example by presenting just enough information to pique curiosity and by using drama in their presentations (particularly with Elementary-aged children). Montessori education also capitalizes on interests that appear regularly at particular times in development, such as the intense interest children have in learning language in the preschool years. Dr. Montessori noted that young children seem to be driven to acquire word labels for the objects in their environment, so in the Primary classrooms, children are given a great deal of vocabulary. Montessori education also capitalizes on unique individual interest. Children pursue learning that is of personal interest to them—not in a manner that excludes large swaths of curriculum, but in a manner consistent with how we know the very best learning takes place. Rather than memorize facts chosen by a faraway state legislative body, children in Montessori Elementary schools write and present reports on what fascinates them, tying it into the foundational curriculum. The Montessori materials and basic lessons ensure a core of learning across curriculum areas, but each child's imagination is invested in the particular avenues of learning that the child pursues beyond that core. These topics are discussed in chapter five.

5. EXTRINSIC REWARDS ARE AVOIDED

Dr. Montessori saw extrinsic rewards, such as gold stars and grades, to be disruptive to a child's concentration. Sustained, intense periods of concentration are central to Montessori education. Dr. Montessori recounts children repeating problems (such as getting the Wooden Cylinders into their proper holes) dozens of times in succession, displaying a level of concentration that she herself had previously thought young children were incapable of. At the Primary level, children might concentrate intensely for 30 minutes at a time. By the Elementary level, they might work on the creation of a single chart for much of the day or even several days in succession. The rewards in Montessori education are internal ones. A good deal of research suggests that interest

in an already-loved activity, such as learning seems to be for most children, is best sustained when extrinsic rewards are not part of the framework, as discussed in chapter 6.

6. LEARNING WITH AND FROM PEERS

In conventional schooling, the teacher gives the children information, and children rarely learn from each other or directly from materials (except texts, which often tell children rather than helping them discover). Although on the increase, working together is still rare in (conventional) elementary classrooms, where tests, problem sets, and papers are usually if not always done alone. In conventional preschool classrooms, in contrast, children usually play in groups. Montessori education is opposite in these arrangements, and is actually more in line with what developmentalists know about children: Younger children are more apt to play side by side but not necessarily together, whereas elementary-age children are intensely social. In Montessori Primary classrooms, children may often work alone by choice, but in Elementary classrooms children are rarely seen working alone. They pursue knowledge in self-formed groups, creating products ranging from reports to dioramas, charts to plays, and timelines to musical scores. They leave the classroom together in small self-created groups to interview people outside the school or to visit museums or businesses that are relevant to a current project stemming from their own interests. Asked what happens in these small learning groups when one child understands better than the others—a concern that arises out of the individualistic conventional model in which one child might do most of the work—I recently heard a 9-year-old Montessori child respond, “We help each other.” Chapter 7 discusses research on what happens when students work together to learn, rather than working as individual units striving for the highest grades.

7. LEARNING IN CONTEXT

In conventional schooling, children sometimes learn without understanding how their learning applies to anything besides school tests. Dr. Montessori reacted to this by creating a set of materials and a system of learning in which the application and meaning of what one was learning should come across to every child. Rather than learning largely from what teachers and texts say to them, children in Montessori programs learn largely by doing. Because they are doing things, rather than merely hearing and writing, their learning is situated in the context of actions and objects. For example, as described earlier, children go out of the Elementary classroom and into the world to research their interests. A small group of children who have become interested in bridges, for example, may choose to locate a local engineer who will meet with them to explain how bridges are designed. This approach, sometimes referred to as “situated cognition,” reflects a movement in education that goes alongside current interests in cultural psychology, apprenticeship, and how people learn through participating in their culture. Evidence concerning the validity of this approach is reviewed in chapter 8.

8. TEACHER WAYS AND CHILD WAYS

Dr. Montessori's recommendations on how teachers should interact with children anticipated later research on parenting and teaching. When adults provide clear limits but set children free within those boundaries, and sensitively respond to children's needs while maintaining high expectations, children show high levels of maturity, achievement, empathy, and other desirable characteristics. Conventional schools have sometimes erred by being too authoritarian, conveying a "do it because we said so" attitude that is not associated with positive child outcomes. When progressive schools fail, it may sometimes be because they trade the authoritarian teacher-centered features of many conventional schools for their opposite: permissive, overly child-centered ones. Dr. Montessori prescribed a third style, one consistent with what is called authoritative parenting and known to be associated with the most optimal child outcomes. Her advice to teachers is reminiscent of the adult styles associated with positive child outcomes in other domains as well. This research is reviewed in chapter 9, "Adult Interaction Styles and Child Outcomes."

9. ORDER IN ENVIRONMENT AND MIND

Montessori classrooms are very organized, both physically (i.e., layout) and conceptually (i.e., how the use of materials progresses). This organization sometimes turns people off: It seems finicky, even obsessive-compulsive. Yet research in psychology suggests that order is very helpful to learning and development, and that Dr. Montessori was right on target in creating very ordered environments in schools. Children do not fare as well in less ordered environments. Chapter 10 reviews research on order and its effect on children. It also speculates on the potential neurological impact of presenting orderly sequences of materials intended to tune the senses.