

By Dr Jean Miller

Dr Jean Miller received her Doctorate of Education from Case Western University in 1981. Her Doctorate dissertation is titled "The Montessori Music Curriculum for Children Up to the Age of Six." Trained in Bergamo, Italy, she holds an AMI 6-12 Diploma. She received an AMI 3-6 Diploma from the Montessori Institute in Cleveland. Dr Miller has over 40 years of experience working with children in both private and public Montessori schools. She has given lectures and workshops to colleges and Montessori groups throughout the world. Dr Miller is an AMI certified consultant, examiner and Primary (6-12) trainer. She has been the music lecturer at training centres in both North America and Europe and Director of Training in the US, Canada, Australia and India.



1. The Advantage of Montessori

The curriculum that evolved in the Montessori movement is based on 100 years of children revealing what they want to learn, approximately when they want to learn it and how they want to learn it. It has been and continues to be a grand experiment done in classrooms on every continent of the world, except Antarctica.

Children learn more easily when they are focusing on what they want to learn when they want to learn it. This circumstance also enables them to learn more.

Teacher training gives a view of the whole curriculum and its interrelationships. This enables a trained teacher to match the curriculum to the child instead of vice versa. That, in turn, enables the teacher to treat children as individuals and it allows the individuals to progress as quickly as possible or as slowly as needed.

In order to provide children with a coherent curriculum, whole views, or overviews, are presented whenever possible. An example for 3 to 6 year olds is the introduction to the decimal system. Initially, children are given information that is necessary so an overview can be understood. This involves introductions to:

- quantities and symbols for 1 to 10
- the concept of zero as a place holder when there is no quantity
- the categories for units, tens, hundreds, and thousands
- all the numbers between one and 9,999

One may then proceed to experiencing the functioning of the decimal system:

- making numbers (i.e. 2786)
- the function of exchange between categories
- addition, multiplication, subtraction, division with numbers using all four categories of units, tens, hundreds, and thousands

Parallel to this work is linear counting. This includes:

- teens
- tens
- the 100 chain
- the 1000 chain
- all of the other chains to the square of the number and then to the cube of the number for each of the numbers from 2 to 9
- skip counting

All of this enables enough of a whole view for children to grasp the functioning of the decimal system and to be able to work within it.

For children from ages 6 to 12, whole views or overviews are provided through the use of Great Lessons. Most everything children are exposed to at this age can fit into those whole views. This

enables children to see interrelationships between and among the different parts of the curriculum. With this possibility, the curriculum is coherent rather than a collection of unrelated bits.

2. Evolution of the Montessori Curriculum

From the very beginning, Montessori set up conditions so children could reveal, through their choices, what was appropriate for children at different ages. Here is a description of the process in her own words:

"We started by equipping the child's environment with a little of everything, and left the children to choose those things they preferred. Seeing that they only took certain things and that the others remained unused, we eliminated the latter. All the things now used in our schools are not just the result of elimination in a few local trials, but in trials made in schools all over the world. So we may truly say these things have been chosen by the children. We found there were objects liked by all children, and these we regard as essential....A child chooses what helps him to construct himself.... This close determination of all the objects provided, has its reflection also in the social life of the class. For if there are too many things, or more than one complete set for a group of thirty or forty children, this causes confusion. So we have few things, even if there are many children."

Materials and exercises were always offered to children in mixed age groups. Often these were presented to older children who rejected them. Sometimes they were attractive to younger children.

"When we try to show something to the older children, the younger ones crowd around showing eager interest. This interest was especially shown by a child of six towards a chart illustrating the relative sizes of the sun and the earth by globe and point. The younger children were thrilled by the realisation that this invoked in them, and were unable to tear themselves away though the older child for whom the instruction was planned found it rather commonplace, and needed some other thing to arouse in him similar interest. There is a difference between such enthusiasm and mere understanding. The point and the sphere touched the imagination of the younger child, leaving him full of enthusiasm for something beyond his former limits, belonging not to the physical environment, which cannot be grasped by hand. If moreover this particular illustration left the older child unmoved, it was not that nothing had the power similarly to touch his imagination...."

("To Educate the Human Potential" pages 9, 10)

Through this experimentation, materials and activities were either rejected or "settled" down to their appropriate ages. In this manner the environment was made more suitable over time. As the

environment became more suitable, children were enabled to reveal more and more of their true nature. This, in turn, enabled adults to make the environment still more suitable, which then enabled children to reveal more of their true nature. In Montessori classes, this is an unending process.

From this 100 years of history we can see that the natural condition of childhood is to want to learn, grow and develop in a positive manner, physically, socially, emotionally, spiritually, and intellectually as a whole human being.

3. Open-Ended versus Close-Ended Activities

One of the key aspects of Montessori is that it offers children "open-ended" activities. This allows for exploration and creative thinking. Another key aspect is that it offers uninterrupted three-hour work cycles that enable children to work, often in deep concentration or "flow", until something in their inner being is satisfied. This means that children are deeply engaged in inner-directed work that is based on interest.

This may be contrasted with "close-ended" activities. In this kind of activity, children are provided with questions to explore. These questions come from an outside source such as textbooks, which provide a list of questions, or from workbooks or "work sheets". These are close-ended activities because, when the page is finished, psychologically the work is over. The result is often just superficial involvement. This is outer-directed activity.

4. How Do We Get To Know the Children as Individuals and What They Need? In Other Words, How Do We Test in Montessori?

The three-year age span allows teachers to get to know the children better than in traditional education where children are in a class for one year and then moved on to another teacher.

In an on-going Montessori class only about one third of the children are new each year, so there are fewer children to get to know at the beginning of the year.

Observation of the class is done on a daily basis. The observation includes the children's behaviour and the children's work.

Children have a choice of activities in the class. They reveal much about themselves through their choices.

Teachers keep careful, detailed records of both their observations and of the lessons they have given.

Lessons for three to five year olds are mostly given to individuals. It is easy to see if a child understands the lesson.

Lessons for the six to twelve age range are given mostly to small groups. The teacher can clearly see how each child is receiving the lesson.

Grouping children for lessons is done as appropriate for the kind of lesson:

- Biology, Geography and History - often prior knowledge is not crucial. When selecting children for the group, different ages, abilities and achievement levels may be mixed for many of the lessons.
- Maths, Geometry and Language - prior knowledge is crucial for many of the lessons. Children who are roughly at the same achievement level, are selected for a lesson. This means that there can still be a wide range of ages in the lesson.
- Rather than by calling all first graders or all third years, children are invited to lessons by name.

5. How Do Children Know When They Know Something?

Individual conferences (teacher and child) are essential. Format for the conference includes:

- child brings daily work journal and all paper work
- teacher brings record of lessons given and observations
- teacher and child review child's work together.

Ask questions that help the child learn to assess his or her own achievement. Example. "I see that you have been doing multiplication with a two digit multiplier on the large bead frame. Do you need more practice with that or are you ready for a three digit multiplier?" If a child says, "I am ready for the three digit multiplier," but really is not, then the child gets the more advanced lesson and sees that he or she was really not ready. In my experience it only takes a few experiences like this and the child learns to make an accurate assessment. The child then becomes a co-evaluator of his or her work.

The last question in the conference is always, "Is there a lesson you would like to have that we have not talked about?" (If the child asks for a lesson that is beyond the child's current capabilities, the teacher can say, "Before we can do that lesson we need to do "X" and "Y" and "Z". Would you like to start on that progression?") This question helps children take ownership of their own educational process rather than having education as something that is completely "done to them" by someone else.

With all of the aspects of Montessori mentioned in sections 4 and 5 above, Montessori teachers do not have the same need to test to find out children's achievement levels as teachers in mainstream settings do.

6. How Are Montessori Children at a Disadvantage in Testing?

First of all Standardised Tests are not in a format familiar to Montessori children. In an analysis of the Iowa Test of Basic Skills in the late 1980s, not one item on the test was found to be in a format Montessori children would recognise. If no preparation is done that would familiarise students with the format, then the results of the test show how well students adapt to a new format. That is not what the test is normed for. The test is normed for content. The results of tests taken by unprepared Montessori children cannot be compared to the norms. In other words, the results are invalid.

Tests are often designed to include abstractions that children are not yet able to construct in their minds. In more mainstream education abstractions are taught. In Montessori the process is quite different. For example, in math children are shown how to use a particular piece of material. The abstraction is not taught. As children work with the material, an understanding of the process or abstraction grows. The understanding may come in the form of a slow realisation or as an eureka moment. Either way, this understanding of the abstraction is more likely to be stored in long term memory than if the abstraction is taught. Teaching the abstraction seems to short-circuit the process. In Montessori, children construct the abstractions. In order to protect this development of long term memory it is important that:

- Parents are not teaching the abstractions at home.
- Parents are not sending children to classes or tutors that teach the abstractions.
- Teachers are not teaching the abstractions in preparations for tests.

Another thing unfamiliar to Montessori children is that tests are looking for one right answer. Montessori children are used to thinking of different possibilities in open-ended activities rather than just one right answer in close-ended activities.

7. Testing versus Creativity, Creativity and Rewards

Research shows that external rewards result in loss of interest in the activity. This supports the conclusion that Montessori came to long ago. (See "The Discovery of the Child" by Maria Montessori, Translated by M. Joseph Costelloe, S.J., The Creighton University, Ballantine Books, pages 59-60.)

In Montessori we want children to stay in touch with their natural, inner desire to learn, grow and develop in a positive manner. This calls for children to be inner-directed. Children who are trained to work for rewards are outer-directed.

The killing of creativity is also accomplished through the use of workbooks and worksheets that call for a "right" answer.

8. The Influence of Tests

Studies have shown that the very wording of tests can influence the outcome. For some examples of this see the book "blink" by Malcolm Gladwell (pages 48 to 58). (He is known for his previous book, "The Tipping Point".)

"The results from these experiments are, obviously, quite disturbing. They suggest that what we think of as free will is largely an illusion: much of the time, we are simply operating on automatic pilot, and the way we think and act - and how well we think and act on the spur of the moment - are a lot more susceptible to outside influences than we realise." (Malcolm Gladwell)

9. An Experiment with Test Information

Years ago an experiment was performed in the United States in which wrong information was given to teachers regarding children's abilities. Teachers were told that high achievers were low achievers and they were told that low achievers were high achievers. At the end of the school year the children had lived up to the beliefs the teachers had about them rather than to the correct test information of the previous year. Those beliefs had come from the information that was deliberately wrong. The American Psychological Association has outlawed this kind of experiment. It may never be done again.

When we think about this experiment, and the information from the book, "blink", we can see how factors other than a test itself influences the outcome of testing.

This is why Montessori wanted us to look at the normalised, intelligent being that is inside every child rather than thinking about the way a child is now.

10. Issue: How Do You Affect The Child's Self Confidence?

In the Children's House all activities are "programmed" for success. If a child does an exercise incorrectly, the child is not corrected. Rather, another lesson on the activity is given. This could happen later in the day or the next day. The lesson given in response to the child's difficulty emphasises the part of the activity the child had not understood.

In the six to nine class, one must still be careful about corrections. In general, one can be a bit more direct at this age level, but one must gauge the child's level of self-confidence and offer help accordingly.

We can repeat again Dr Montessori's saying that we should address ourselves to the normalised child that is within every child. We are to speak to the best that is within. Whatever we give our attention to in a child, that is the part of the child that grows stronger.

So is sarcasm or belittling ever appropriate? NO!

11. A Short History of Testing

If I remember correctly from my Test and Measurements course in graduate school, the first Stanford-Binet test in the early part of the last century had an item that displayed four faces. Each was from a different race. You were supposed to pick the best one. The "correct answer" was the face that looked Northern European. Today, it is difficult to understand how two such intelligent men could let their own prejudices blind their judgment so completely as to allow them to include a test item that would measure a person's prejudice rather than their intelligence.

There was also a belief at that time that IQ was fixed and could not be changed.

Testing was in its infancy.

The state of testing twenty years ago:

A test question asked children about their favourite (or best) time of year. The correct answer was summer because there was no school. The children in my class did not understand the implications of that question because they liked school. The question seems to have been based on the belief that children do not like school.

A test question showed a picture of a child on a bicycle on a hill. The question asked if the child was going up the hill on the bicycle. The correct answer was yes - but some of the children in my class noticed that there was no chain going from the pedals to the back wheel. They answered "no" but when their test came back from being machine scored, they were marked wrong.

At that point tests were probably not asking such blatantly prejudicial questions as before, but testing was still in its infancy.

If people who construct tests take seriously the information in the book, "blink," perhaps testing could now begin to emerge from its infancy.

12. So Why Do We Use Standardised Tests?

Montessori said we are to prepare children for the culture in which they live and to prepare them so they will be successful in that culture. Testing is part of the culture of today's children in the western world.

When necessary, tests can be useful diagnostic tools. Parents want to know how their children are doing. It takes courage for parents to entrust their children to an educational method that is different from the one they had. They also want to know if they are getting their money's worth. Tests are used for the financial needs of schools that feel they have to cater to the parents' wishes. The government requires standardised testing in schools.

I would like to close with a quote from a Montessorian who lives in Milwaukee, Wisconsin.

"If we must use standardized tests, then they can be approached in a Montessori setting as a Practical Life exercise. We must remember these tests do not measure intelligence but only how well a child can take a particular test at a particular time and place." Carrie Driver Johnson