

A CRITIQUE OF THE MONTESSORI METHOD OF EDUCATION AND MARIA MONTESSORI'S APPROACH TO PEDAGOGIC RESEARCH.

Author's notes:

This essay was a requirement for a tertiary-level training course.

The essay was prepared for an audience hostile to some Objectivist ideas, (the marking professor was a self-declared Jungian). I therefore felt obligated to keep discussions general, rather than delve into epistemology and integrate the Objectivist philosophical ideas which inspire me personally.

The essay was limited to quite a low word count (1500 words) considering the breadth of topic.

This year, I have studied various developmental psychologists and different pedagogic theories. In no particular order these included: Classical education, the progressive movement, John Dewey, Paul Goodman, Rudolf Steiner and Waldorf education, Pestalozzi, A.S. Neil and the Summerhill school, Herbert Khol, Ivan Illich, Paulo Freire, Carl Rogers, Ken Robinson, Bruno Bettelheim, Martin Buber and Krishnamurti, Jean Piaget, Erik Erikson, Gardner, Sigmund Freud, Abraham Maslow, Carl Jung, Mary Ainsworth and more.

I think Jean Piaget's work is enlightening and interesting (although I disapprove of fundamental aspects of the many present day forms of Constructivism). My favoured writer and theorist to date is Maria Montessori - this essay explains why.

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The Montessori Method of education claims to “help children develop creativity, problem solving, critical thinking and time-management skills, to contribute to society and the environment, and to become fulfilled persons in their particular time and place on Earth”

(International Montessori Index, 2011).

The method, based on the work of Italian educator Maria Montessori (1870 – 1952) has spread internationally and is growing in Australia with around 200 schools and centres nationwide (M.A.F., 2011). Several scientific studies show Montessori school students outperform students attending traditional schools (M.A.F., 2011). For example, researcher K. Dohrmann states, “attending a Montessori program from the approximate ages of three to eleven predicts significantly higher mathematics and science standardized test scores in high school” (Dohrmann, 2003). The Montessori Method, while not mainstream, has stood the test of time, steadily gained popularity worldwide and has the worthy aim of an holistic, child-centered education encouraging the development of well-rounded, independent students.

This essay aims to identify and evaluate the key principles behind the Montessori Method of education. Maria Montessori held distinctive views about how to best aid a child’s learning and innovated new methods and materials for educating children. In addition her observation based research methodology is of interest and may help other teachers improve their classroom environment and curriculum. Montessori described qualities she believed a teacher should possess, stressing the importance of the teacher as a scientific observer and the importance of an on-going process of teaching improvement and refinement (Rohrs, 1994).

Montessori began her teaching as an outgrowth of her post-graduate research into the education of children with intellectual disabilities. Influenced by French physicians Jean Itard and Edouard Seguin, she believed education could help treat children with intellectual disabilities and she worked to prepare an environment for the scientific study of these children. Itard emphasized stimulating and developing the senses of his patients while Seguin had invented exercises for sharpening sensory functions (Rohrs, 1994). These inspired Montessori’s own self-correcting “auto-didactic” teaching materials. By 1906 she was heading a day-care centre in San Lorenzo.¹ Here Montessori further refined her teaching materials and her self-directed approach to learning. Believing children could teach themselves important skills and knowledge using her sensorial materials, she noted which tasks the children freely chose to work on for extended periods. Montessori was particularly interested in children achieving a state of “concentrated attention” when performing tasks. (Standing, 1984)

Montessori was highly independent and had no real collaboration with other educators involved in the New Education movement such as Dewey, Kilpatrick, Decroly and Ferriere (Rohrs, 1994). Some researchers state she was influenced by Rousseau in her belief of a child’s natural inclination to learn and develop. For example, Montessori states:

¹ San Lorenzo is a district in Rome, Italy. At the time Montessori headed the day care centre, San Lorenzo was a relatively poor, run down area.

“It is essential to let nature have its own way as far as possible; the more freedom children are allowed to develop, the quicker and more perfectly they will attain higher forms and functions” (Rohrs, 1994).

Montessori’s conception of the “absorbent mind” was influenced by Percy Nunn. His mne and hormic theory inspired her ideas on the constructive function of the developing human mind which works to determine the course of life in constant interaction with the environment. (Rohrs, 1994) Later, Montessori and her son Mario applied Piaget’s Stages of Cognitive Development to their teaching methods and developed an approach to teaching older children.

Montessori viewed teacher observation as critical to developing a scientific pedagogy. Many of her pedagogic premises are derived inductively from empirical observation. Montessori described the “spirit” of her ideal scientist; his perseverance and desire for knowledge “prolonged practice in observing nature unrelaxing in his vigilance”² (Montessori, 2004). She intended to provide a scientific basis for the education of children, capable of continued re-evaluation by means of practical experiments (Rohrs, 1994). Montessori ascribes universality to basic stages in a child’s learning and development. However she did not believe that the art of education could arise spontaneously out of experiments alone. She took pains to point out the necessity for philosophical theories³ in the interpretation of pedagogic research saying that observations have “natural bases on theoretical principles”. (Montessori, 2004)⁴

Montessori wrote several books detailing her approach to pedagogy and was a proponent of New Education as an international movement. She was critical of contemporary researchers “confusing the experimental study of the pupil with his education” (Montessori, 2004)⁵ believing them to have lost sight of the ultimate reason for their research; pedagogy.

Nevertheless, Montessori viewed herself primarily as an educator and stated, “I have no intention of producing a treatise on Scientific Pedagogy” (Montessori, 2004)⁶

² Montessori asks: “What in fact is a scientist?”

“Certainly it is not the man who is capable of manipulating all the physical apparatus in a laboratory, or who knows how to prepare microscopic sections in biology. It is very often persons much below the standing of scientists, such as assistants and laboratory staff who, rather than the scientists, are the greatest expert on experimental technique.”

³ The fields of ontology, epistemology and ethics are particularly relevant to education.

⁴ Montessori regarded pedagogic empirical data without underlying philosophical principles as being an insufficient method to determining scientific pedagogy. She likened the process to a person who knows how to spell but has no understanding of the meaning behind the words they read. (Montessori, 2004)

⁵ Montessori states: “Besides, scarcely was it the teacher who carried out such research, but doctors that were more interested in their own special science than in education, and who sought to make experimental contributions to psychology and anthropometry rather than to organise their work and their objects for the building up of scientific pedagogy.” (Montessori, 2004)

⁶ Writing on this topic in 1948, Montessori did not believe any accurate scientific pedagogy had been developed stating: “The truth is that the so-called scientific pedagogy has never yet been either worked out or defined.” (Montessori, 2004)

The premises of the Montessori Education method are summarized in table 1:⁷

Table 1. Premises of the Montessori Method

- Children are capable of self-directed learning. I.e. Children are competent beings and are encouraged to make their own decisions.
- A teacher should generally be an observer of the child instead of a lecturer. (see table 2) Teachers present new teaching materials and learning tasks once they have observed the child master the current task(s).
- Childhood development progresses through “sensitive periods” of a few weeks or months during which time a child is particularly receptive to learning specific skills and knowledge. For example, crawling, sitting, walking, talking, reading, counting and levels of social interaction.
- During these “sensitive periods” skills and knowledge are learned effortlessly and joyfully.
- Children have an “absorbent mind” to around age 6. They seem to have unlimited motivation to perfect skills through repetition, to gain competencies and to engage with their environment. For example, the repetitive babbling of an infant as language practice.
- Infancy is the critical phase in the evolution of the individual during which the groundwork for subsequent development is laid.
- There are universal development and learning stages in a child’s growth. The Montessori Method implies a hierarchical process of learning and development.
- Children learn through discovery. Hands-on “sensorial” teaching materials are used that have been designed with a control for error. This way, children can correct their own mistakes.
- The hand and touch are integral to the developing brain in young children. Children are encouraged to touch shapes, letters, temperatures, etc that they are learning about.
- Children learn when alone and in a state of deep concentration. The teacher is trained to encourage this type of learning and to not interrupt once it occurs. Montessori viewed this as a process of childhood play whereby the child learns the basis for later concepts. Repetition is encouraged until the child tires of the activity.
- Children should be masters of their school room environment. Students are provided with the tools and responsibility to manage the upkeep of their classroom. This is intended to help develop student independence.

Table References: (New World Encyclopaedia, 2008) and (Rohrs, 1994)

The application of the above premises to the classroom can be summarized by three main ideas. Firstly, the emphasis on student self-directed learning. Secondly, the learning environment is of paramount importance including classroom layout and teaching materials. Finally, the focus on “sensorial” learning experience and auto-didactic teaching materials.

Self-directed learning is intended to maximise the opportunity for children to learn tasks they are naturally ready to learn during “sensitive periods” of their development. The self-directed student should be more motivated to engage in the learning tasks. Upon completing tasks students have themselves chosen and deemed relevant, they thereby develop a sense of achievement, increasing

⁷ Mario Montessori’s list of psychological “human tendencies” which serve to underpin Maria Montessori’s educational premises can be found in Appendix I.

their self esteem. Education should ideally encourage an appreciation for learning and knowledge itself, as students recognise value and enjoyment in their learning. Self directed learning should help achieve this aim.

Table 2 summarises the responsibilities of a Montessori teacher (or directress):

Table 2. The role of the teacher in a Montessori school

- The environment should always be kept in order, down to the smallest detail – always beautiful and in perfect condition
- The teacher should remember they are in a sense also a part of the environment. They should be presentable, tidy, well dressed, serene, careful and full of quiet dignity.
- The role of the teacher is to guide children out of their “inner chaos” and to help them become engaged with the materials in the classroom. This may initially call upon traditional teaching skills such as songs and drama to get children interested in an activity
- The teacher identifies the most suitable material to introduce to each child and the best time to introduce it. The task should present a challenge but be within the child’s ability.
- The teacher should not interfere with the child’s activities as long as the child is engaged in a task. This does not mean that anything goes. Montessori states that a teacher “need have no qualms whatever about disturbing the child if he is not doing anything in particular; whilst if he is disturbing his neighbours it is her duty to intervene at once”.
- The teacher works to implement the “three stages of learning”:
Stage 1: Introduction of the concept to be taught by means of a lecture, lesson, etc.
Stage 2: processing the information, developing an understanding of the concept through work, experimentation, creation.
Stage 3: "knowing", to possessing an understanding of, demonstrated by the ability to pass a test with confidence, to teach another, or to express with ease. Montessori teachers assess whether the child has mastered the learning task and this can be as simple as questioning a child’s understanding of the key concept intended to be learnt.

Table References: (Standing, 1984) and (Stephenson, 2010)

Montessori classrooms have 6 main areas: Practical Life, Sensorial, Cultural, Science, Language and Mathematics. Classrooms are not anarchic environments even though learning is self-directed. They are highly organised and kept meticulously clean. Children are considered masters of their environment encouraging a sense of caring, respect and responsibility for the classroom, themselves and others. Classrooms are designed with child-sized furniture and low lying shelves. In Montessori’s words, “All focus is on the needs of the child” (Hainstock, 1997).

The practical life area includes tasks such as buttoning up clothing on mannequins, pouring using little pitchers, lacing and polishing shoes and using tongs to pick up small items and transfer them between containers. These tasks train hand coordination and improve self esteem by helping children gain independence in their daily lives.

The sensorial materials are designed to isolate attributes of objects, enabling the child to form clear abstract concepts of these attributes through experience. For example, the red rods, each made from the same coloured wood with identical breadth and width, only vary in their *length*, the

specific concept under investigation⁸ (Standing, 1984). The isolation of a concept's physical attributes in sensorial materials is fundamental to Montessori's success and helps students develop deep understanding via a solid experiential frame of reference within their mind.⁹

Montessori also aimed to develop a child's ability to concentrate stating:

"Right from the beginningthis phenomenon of concentration has been our guide in building up our method" (Standing, 1984).¹⁰

A person will only undergo deep learning if they choose to and apply effort to the learning task. Therefore it makes good sense to create an environment highly conducive to thinking, where the materials fascinate and engage the child.

3-6 year old students are introduced to studying culture, science, language and maths in ways tailored to their stage of developmental. Learning tasks focus on sense perception and experience. For example, the Montessori Method uses sandpaper letters when teaching the alphabet to young children who trace the letter with their finger, then draw and sound out the letter. Unsurprisingly, when learning to read, the phonics method is used helping students connect their reading to spoken language and helping them sound out unfamiliar words. (Flesch, 1955) Sensorial materials are also ideal in maths. The trinomial cube for example is used to match up colours and shapes. In later years, a student can learn that the cube physically embodies the mathematical relationship $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$. (Montessori, 2004)

The exposure to a broad range of topics aids a well-rounded education. Most modern Montessori schools also offer a range of extra-curricular activities including music, art and sport.

Classes are grouped in 3 year age ranges and can be quite large with over 30 students per class. The advantage of 3 year class ranges is that children have a chance to learn from peers when young and mentor others when older, both beneficial learning experiences. Additionally the teacher has more time to get to know and understand individual students.

Assessment is generally a qualitative analysis of a child's performance. A list of skills, activities and critical points achieved, plus a teacher narrative of achievements, strengths and weaknesses, with emphasis on the improvement of those weaknesses. Improving student weaknesses is a key component of achieving a well rounded education.¹¹ A child with skills in multiple areas can

⁸ The musical bells, designed to teach children the notion of musical pitch again look as similar as possible, and so on.

⁹ Piaget and later other constructivist researchers have emphasized the role of experience as being crucial to a student "constructing" their own knowledge. (Bodner, Klobuchar, & Geelan, 2001) (Piaget, 1972)

¹⁰ This statement sums up the key aspect of the Montessori Method which first attracted my attention. As a musician I often spend over 2 hours a day practising the two instruments I specialise in. During this time I often achieve deep states of focus and concentration. In my experience this state is both highly satisfying and highly productive to learning. This ability to engage and concentrate on a task comes fairly naturally to children and I believe it should be encouraged and cultivated throughout one's life.

¹¹ Personally I do not believe children should be pigeon holed and/or encouraged to specialise too much, too early on in their education. I also believe teachers should have high expectations of their students and help them to have the confidence to tackle their weaknesses.

maximise their future opportunities and by overcoming challenges, can build self esteem and independence.

Some criticise Montessori for her ignorance of contemporary psychology. In 1914, Killpatrick delivered a 71 page manuscript entitled *The Montessori System Examined*. He was critical of Montessori's approach, stating she "generalizes unscientifically as to the condition of contemporary educational thought and practice from observation limited". Kilpatrick commended her ideas of child liberty and discipline but regarded Montessori's concept of child development as "inadequate and misleading". He insisted that the "three R's" should not be taught before age six. However considering the focus on sensory experience and the observation that children become engrossed in the learning tasks, this criticism is unwarranted.¹²

Kilpatrick, Dewey and others have criticised the lack of group work and group instruction (Psychology Wiki, 2011). However modern Montessori schools include group tasks in their curricular. (Stephenson, 2010)¹³. Interestingly, this group work is often optional in order to preserve self-directed learning. Additionally, children may work together on any task. They are provided with the freedom to collaborate if they desire with the teacher ensuring they are polite and reasonable. This freedom enables children to discover for themselves the beneficial nature of social interactions.

Montessori schools may not focus enough on lecture and presentation type learning experiences for older students.¹⁴ These are common forms of learning in the adult world and it may be beneficial to combine self-directed learning with more lecture/presentation learning for older students.

Some studies indicate the higher than average academic standard of young Montessori students wears off by the end of primary school (Lillard & Else-Quest, 2006).¹⁵ While the sensorial materials for younger children are well developed, it is possible that the syllabus for older students could benefit from further development. Using sensorial materials, basic abstract concepts can be from direct perception. More advanced knowledge can also be aided by direct experience but also involves building complex abstractions upon other more basic abstractions, then integrating this

¹² Piaget details an example of a four year old boy seated on the ground counting pebbles. The boy put the pebbles in a row and counted them in one direction, then another. "He found this marvellous that there were ten in one direction and ten in the other direction. So he put them in a circle and counted them that way and found ten once again.....There was the discovery he made." (Piaget, 1972) This is an instance of learning a basic mathematical concept. It would be ridiculous to stop a child from engaging in this spontaneous, play-like activity.

¹³ Montessori observed children's "herd instinct" in the 6-12 age range whereby children often freely choose to socialize and work in groups. The Montessori education system does not seek to discourage this process. For example, older students may help younger ones. In addition, students proud of completing their learning task, may want to share their discovery with others or help others working on the same task.

¹⁴ I have not been able to determine the average proportion of classroom time devoted to traditional teaching methods for older children in Montessori schools. One reason for this is that Montessori schools do vary in the exact nature of their curricula. After all the Montessori name is not legally protected and can be used by anyone.

¹⁵ In this study Montessori students still outperformed control students in social skills by age 12.

new knowledge with previous knowledge (Biggs & Collis, 1982) (Krathwohl R David, 2002). Preparing a good syllabus for teaching more advanced material is not easy.¹⁶

It's also possible that after a certain age, most students may benefit from a more traditional classroom environment.

Overall, the Montessori Method appears effective and beneficial in both theory and practice especially for young children. Children are implicitly taught the value of being observant and analytical, of exerting effort in order to solve problems often in the form of sensorial materials. These materials provide a solid experiential basis for forming accurate concepts underlying the subject matter being taught. The Montessori Method appears well suited to preparing a child to become an independent, competent and hopefully happy adult.

Appendix I – "Human Tendencies".

Montessori believed in universal, innate characteristics in human psychology. Her son Mario Montessori identified these as "human tendencies" in 1957 including the following:

- Self-preservation
- Orientation to the environment
- Order
- Exploration
- Communication
- Work, also described as "purposeful activity"
- Manipulation of the environment
- Exactness
- Repetition
- Abstraction
- Self-perfection
- The "mathematical mind"

In the Montessori Method of education, these human tendencies are seen as driving behavior in every stage of development, therefore education should respond to and facilitate their expression.

(Montessori M. 1966)

¹⁶ Further investigation may be able to help determine the performance of the Montessori Method of education for older students.

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