

# MONTESSORI RESEARCH EUROPÉ

## MO.R.E.

### MONTESSORI RESEARCH & MORE NEWSLETTER 2-2009 (December)

Dear members of MORE, dear colleagues and friends,

The Swedish network M.E.R. (Montessori Education and Research) are pleased to send you the second 2009 issue of our NEWSLETTER Montessori research & MORE.

Another year is coming to an end and we would like to share with you some of the events that have been taken, and will take place in relation to the Montessori pedagogy.

The first theoretical contribution sent to the Newsletter is from Kerstin Signert and Ference Marton, a paper discussing affordances for learning with a theoretical framework by Ference Marton. Francis Douglas from Ireland contributes with his lecture from the Stockholm Montessori conference in 2007 about Montessori and Froebel.

Harald Ludwig presents, under the heading of announcements, the edition of Maria Montessori's collected works in German. In whole there will be twenty-three volumes, containing Maria Montessori's published work, as well as her previously unpublished writings. The first edition will appear in 2010 and it is planned that the whole edition will be completed in 2016. This newsletter will also give you a brief presentation of the activities organized by M.E.R. that are going on in Sweden. Two conferences have been taken place in Italy in November one in Milan and one in Rome, both about the adolescent child in Montessori schools. Clara Tornar will give you a short report from the Rome conference.

The Swiss actress, Irene Eichenberger has been studying Maria Montessori's books as a preparation for a theatrical production about what kind of school we want in the future. Short information is found under the heading some additional news.

As a final point, under the heading other information, we send you some information about the next Montessori Europe conference.

A special thank to those who offered their reflections and others who sent us articles: this enables us all to enrich our study horizons.

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## 1. Theoretical contributions

### Affordances for learning

#### **Studying teaching in terms of the learning that the inherent pattern of variation and invariance makes possible: Maria Montessori's Pedagogy as an example**

Ference Marton & Kerstin Signert, Göteborg University, Sweden

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*In this paper, we want to advance the thesis that learning is to a great extent learning to see differences, learning to discern and to tell apart things. Whatever specific thing we are supposed to learn, there is a specific pattern of variation and invariance without which it cannot possibly be learned. A highly important aspect of learning is thus the creation of the necessary conditions, the specific patterns of variation and invariance. This is a central idea of a recent pedagogical theory of learning, the variation theory, but it is an idea argued by the psychologists of perception, Eleanor and James Gibson, 50 years ago. The same idea is also foundational in Maria Montessori's pedagogy.*

#### **INTRODUCTION**

It should be obvious that learning and teaching are not causally linked. The teacher cannot make the students learn. It should be obvious as well, however, that learning and teaching *are* linked. The teacher can make it possible or not for the students to learn certain things; the probability of learning something is undoubtedly greater when it is possible to learn it than when it is not. Our methodological approach to the study of teaching amounts to trying to find out what is possible to learn in different situations, constituted by teachers and students within given institutional frames. Just like a certain environment affords a certain perception (Gibson, 1986), a certain situation affords certain learning, thereof the title of this paper.

The kind of learning that we are interested in, is learning that enables the learners to deal with novel situations in more powerful ways than they would have been able to do without that specific learning. So, what does it take to learn how to handle novel situations in more powerful ways? Research on comparisons between more and less powerful ways of handling novel situations, for instance comparisons between experts and novices ways of handling novel situations, suggests that a critical difference concerns the capability of telling one situation apart from another; to grasp what kind of situation a certain situation is, that is, how it differs from other situations; what its constituent parts are, that is, how they differ from each other; and to identify what is critical in that situation, in relation to a given aim, from that which is not (see, for instance, de Groot, Glaser, etc.). Learning to handle novel situations in powerful ways amounts to

becoming able to discern those situations, to discern their constituent parts and to discern their critical aspects, or what has to be taken into consideration.

But, what does it take to discern a certain critical aspect? It amounts to being able to notice how a situation, or part of it, differs from other situations, or parts of them in turn, in a certain respect (Marton & Tsui, 2004). Supply and demand, to take one example, are critical aspects of a situation in which someone has to work out the price of a product. Discerning those aspects is dependent on being able to tell supply and demand apart in that particular situation from supply and demand in other situations.

How can we prepare the learners for doing that? Given that they have previous experience of differences in supply and demand, they may notice how supply and demand in this situation differs from supply and demand in other situations ( higher/lower or simply high/low).

In order to discern a certain aspect of a situation, the learner must thus experience variation in that particular respect between different situations and in order to experience variation, there must be variation, which the learner may or may not experience, or perceive. The learners, however, cannot experience variation in a certain respect, even if there is variation in that respect, if there are simultaneous variations in other respects. If we want learners to understand that variation in price is a function of variation in supply and / or demand, we have to let supply and demand vary, and in turn co-vary with price, one at a time, and letting both supply and demand vary and co-vary with price together. Subsequently:

SUPPLY	DEMAND	PRICE
v	I	V
i	V	V
v	V	V

v=variable

i=invariant (cf. Lo et al).

A great number of studies show that for every object of learning there is a certain pattern of variation and invariance, without which, learners cannot possibly appropriate that object (Marton & Morris, 2002; Marton & Tsui, 2004; Pang & Marton, 2003, 2005; Marton & Pang, in press; Lo, Pong & Chik, in press).

In one way or another, all teachers make use of variation and invariance, mostly without being aware that this is what they are doing. In traditional Chinese pedagogy, however, there is an old and much used teaching method, called "teaching with variation", the label referring to the systematic use of variation and invariance in teaching (see Gu, Huang & Marton, 2005). Similar

ideas have appeared in Western educational thought, too. This will be illustrated through the case of Maria Montessori. Our aim is twofold, firstly, to illustrate the central role of variation / invariance in the Montessori theory of pedagogy. Secondly, to illustrate the central role of variation / invariance in current pedagogical practice that originates from the Montessori theory. The latter aim simultaneously illustrates our methodological alternative: we examine teaching in terms of the learning that the pattern of variation and invariance constituted in the classroom makes possible.

## **The Montessori Pedagogy**

In 1896, Maria Montessori (1870-1952) became the first female physician in Italy and was employed by Rome's university hospital where she worked with mentally deficient children. Even though the children were properly fed they would throw themselves onto the floor when they had eaten to get a few breadcrumbs that had fallen down; these crumbs were, however, not eaten but played with. Montessori came to the conclusion that it may not be food that they hungered for but stimulation. There was nothing in their environment to touch or feel, they had nothing to play with, nothing to do and they grabbed the only things that came their way that would ease the inescapable boredom (Kramer, 1976). Montessori assumed that the children's problems were more related to education than to medicine, and talked about this at a teachers' congress in Turin, Italy, in 1898. Soon after that, a school opened in Rome for mentally deficient children, the *Ortophrenic School*, where Montessori became the principal.

*Scuola Magistrale Ortofrenica* in Rome was an orphanage combined with a state funded educational institution for teachers of intellectually challenged children. Teachers from the schools in Rome were educated, while the children were educated.

The issue of mentally deficient children fascinated Montessori. She started reading everything that she could find on mentally handicapped children. Her studies led her to the works of two French physicians Jean Itard (1775-1838) and Edouard Séguin (1812-1880). The pedagogic writings of Jean Itard are most interesting and minute descriptions of educational efforts and experiences. Anyone reading them today must admit that they were practically the first attempts at experimental psychology. But, the merit of having completed a genuine educational system for deficient children was due to Edward Séguin, first a teacher and then a physician (Montessori, 1912/1964).

In 1907, a day-care centre opened in the bottom floor of a tenement house in the Quarter San Lorenzo in Rome. About 50 poor pre-school children had been gathered and Montessori was commissioned to lead a project where she, through observations, would investigate whether the teaching material, that had provided such positive results with the mentally deficient children in the *Ortophrenic school*, could provide children of average intelligence with the best possible development as well. In her inaugural speech, she explained that it was a social project to help mothers with their children, so that they would not have to worry about their children while they were working in the factory. Montessori called the day-care centre *Casa dei Bambini*, and explained that the word *casa*, that in Italian means both house and home, should be interpreted as *home* just because it would be the small children's home during the day.

The day-care became a success. The children made results that had never been seen anywhere before. The news of the day-care where the children learned both practical work, and reading and

writing soon spread and people came from all over the world, although primarily from USA, to San Lorenzo to see the fantastic education provided there. According to Montessori, reading would give moral and mental training that would prepare the children for the future and provide them with knowledge of their society within certain frames that would keep the children occupied when the parents were at work (Sandin, 1986/2003).

## **Education of the Senses**

Perception is a process that means that the surrounding world appears with an increasing amount of qualities. Gibson & Gibson wrote about the meaning of differentiation, or discrimination; learning becomes a matter of distinguishing differences, for instance when a child learns to differentiate between objects and notice differences in them. In order to know what something is, one must know what it is not, for instance, contrasts such as sounds/silence, cold/hot, light/heavy, tall/short, etc. “Discrimination gets better with practice, both with and without knowledge of results” (Gibson & Gibson, 1955).

To recognize and be able to use the different distinctions regarding the colour yellow, is a matter of learning how to look and notice different nuances, for instance, and through experience and discussions with people more familiar with the activity, realize what variations that are interesting, new, exciting or what other qualities an expert sees in them. According to Bateson’s view of information (1988), it is a matter of distinguishing what differences are worth noticing (Säljö, 2005). “The implication is that, for a child to identify an object, he must be able to identify the differences between it and the other objects, or at least that when he can identify an object he also can identify its properties” (Gibson & Gibson, 1955).

Education of the senses, or the so-called sense training, plays a significant part in the Montessori school. The aims of Montessori’s method were, according to herself, twofold: both biologically and socially. The biological aspect implies the facilitation of the natural development of each individual, and the social aspect implies preparing the individual for the world.

For both aspects, training the senses is highly important. The purpose of the sense training materials is that the children learn to deal with the materials independently, learn to distinguish and understand sensory impressions, get motoric training and become conscious about shape, size and colour. “The aim is an inner one, namely, that the child train himself to observe; that he be led to make comparisons between objects, to form judgements, to reason and to decide; and it is in the indefinite repetition of this exercise of attention and of intelligence that a real development ensues” (Montessori, 1914/1965).

Montessori thought that the development of the senses is the foundation of all learning and was of the opinion that children, by training their senses, would become more susceptible to new things in their education. The purpose of the sense training is to increase the ability to discern differences between different sensory impressions. The training is not intended to improve the children’s eyesight but to make them learn to know and understand what they see. An important part of the sense training is to isolate the sense by shifting from few stimuli, that are in great contrast to each other, to many stimuli only slightly different from one another, where the differences is increasingly subtle and more difficult to discern (Montessori, 1964).

Montessori isolated the individual senses to a great extent in her exercises (Katz, 1939). Inspired by Itard, who thought that, hearing is one of the most important senses when developing the intellect. One of his methods for exercising the hearing ability was blindfolding a child. He would then produce two extremely loud noises of sharply contrasting kinds, the sound of a bell and the sound of a drum. When the child heard the sound he would show that he knew what it was by imitating it (Montessori, 1912/1964).

Montessori applied a similar but yet different approach to Itard's method. She would first make the child familiar with experiences in stark contrast to each other, such as red and blue, and then with a graded series of experiences, such as different nuances of blue, teach the child what is red and what is blue, and at the same time teach the child to compare, contrast and distinguish, that is differentiate different sensory impressions and arrange them in some kind of order. Experiencing variation is closely related with our senses. The sensory organs serve the function of registering differences in sensory impressions, or if you like the experience of variation, such as the contrast black/white, movements, sounds, etc.

To overcome the difficulties in learning concepts, Montessori used the *Three Stage Lesson*. This idea, which she took from Séguin, is often the first formal lesson children are taught in the Montessori school (Signert, 2000). Séguin found that the children learned the names of things more quickly and effectively when he followed a simple three-stage lesson format in presenting them. Montessori teachers follow the same formula today and find it does indeed work (Seldin, 1986).

The three periods work roughly as explained in the example below and is highly applicable in many subjects. *First Period*: Associating the sensory perception with a name. For example, presenting two colours, red and blue, to the child. When presenting the red, simply say "This is red," and when presenting the blue, say "This is blue." Then, place the colours on the table in front of the child. *Second Period*: Recognizing the object corresponding with the name. Simply ask the child to "Give me the red," and then, "Give me the blue." *Third Period*: Remembering the name corresponding with the object. Ask the child, showing him the object, "What is this?" and he should respond, "Red" (Montessori, 1912/1964). However, Montessori claims that for normal children, there is a period preceding Séguin's three, a period which, she says, contains the real *sense education*. It is "the acquisition of a fineness of differential perception, which can be obtained *only* through [so-called] auto-education" (Montessori, 1912/1964). During this stage the child, for instance, learns to observe and differentiate between different colours and pairing them. Once the three-stage lesson commences, they already recognize the colours and it facilitates the learning process,

In *The Montessori Method*, she writes that Séguin strongly insists on the use of the three periods, and he stresses that the colours, as in the case above, or other didactic material, should be left in front of the child for a while. He also advises against presenting one colour alone, but always two at a time, since the contrast stimulates the chromatic memory. She comments the method stating that "Indeed, I have proved that there cannot be a better method for teaching colour to the deficient, who, with this method were able to learn the colours much more perfectly than normal children in the ordinary schools who have had a haphazard sense educations" (Montessori, 1912/1964).

The Montessori pedagogy involves many different kinds of classes quite different from ordinary teaching. The three-stage lesson serves a very central function within the pedagogy in, for instance the so-called Sensorial Activities. Here, the method is used to teach children the names of qualities and their various degrees. For the Practical and Cultural Activities that are closely related to everyday life, it is used to introduce the names of the implements and materials the child is using. The three-stage lesson is, furthermore, used in Mathematics Activities when the child learns the names of symbols used to represent quantities and functions, and in the Language Activities, it is used to help the child associate written symbols with sounds, and in some exercises, to broaden the child's vocabulary (Gettman, 1987).

Learning in this context, becomes a matter of noticing differences (Gibson & Gibson, 1955). Through the three-stage lessons, the child comes to know many words very thoroughly: large/small, thick/thin, long/short, dark/light, rough/smooth, heavy/light, hot/cold, and the names of many colours and geometrical shapes. Such words do not relate to any particular *object*, but to the dimensions in terms of which objects are perceived. In fact, the name of an activity is only given *after* a long exercise, in which the child, concentrating his attention on different qualities of objects, has made comparisons, reasoned, and formed judgements, until he has acquired a power of discrimination which he did not possess before. In a word, he has *refined his senses*; his observation of things has been thorough and fundamental; he has *changed himself* (Montessori, 1912/1964). To know what something is, one must know what it is not. (Gibson & Gibson, 1955). Prochazka claims that all lessons, irrespective of subject, from language training and botany to geometrics and arithmetic will follow this pattern (1991).

The variations' significance for our sensory experience seems to be connected with how we tell others of our experiences. Variations seems to make a significant difference in what we experience with our senses, what we perceive and understand, the aspects we discern and thus also what we learn. It seems as if our sensory organs primarily serve the function to notice variations (Emanuelsson, 2001).

## **The Variation Theory**

The variations theory is a theory about learning and consciousness (Runesson, 2004). Key concepts within variations theory are variation, discernment and simultaneity. A central thought in this theory is that how a person acts in the world is a function of how he perceives the world. To perceive something in a powerful way means to discern its critical characteristics and focus on them at the same time. If we want to make it possible for the learners to act in a powerful ways in the world, we must enable them to see the world in a powerful ways (Marton, 2005).

According to variation theory, learning is always learning of something. When directing our attention at something, there is an object for our consciousness. Learning has an object, an ability to do something with something. Experience and action has a special relation within variation theory: we can only act based on how we experience something. Knowledge is constituted as a subject – object relationship (Marton et al, 2004).

Discernment means that the constituents of a context appear against the background of a whole. It is not only the aspects that are discerned that are interesting, but also how these interact with each



other. Learning can be interpreted in terms of discrimination and differentiation. Differences in the pattern of discrimination are critical when learning. As we develop an ability or a proficiency, we become more skilled in being able to discriminate and differentiate (Runesson, 2004). As we learn, we become better at looking. The meaning what we experience is constituted as a pattern of simultaneously discerned aspects and their relationship to each other. Differentiating in turn requires variation (Runesson, 2004). According to the preceding line of reasoning, it is necessary to pay attention to what varies and what is invariant in a learning situation, in order to determine what it is possible to learn in that situation and what is not (Marton & Tsui, 2004).

## **The Montessori material**

To meet children's needs for activity and motoric activity, Montessori developed didactic work material for different stages of maturity and interests. This material was in many cases developed by Montessori herself, inspired by both Itard and Séguin. Of the material used in the Montessori school, there is only one copy available of each kind, but there are several different kinds of material that have the same difficulty to enable the children to choose a different material if the one they intended to use is unavailable. If several children want to practice the same difficulty with the same material, they can also work together with the specific material. Small children often handle it in a sensory-motor mode, while older children can use the same material for intellectual understanding. Characteristic for the material, is thus that it is manufactured by people to have special qualities that are interesting for different kinds of activities (Säljö, 2005).

Sense training is of great significance when, for instance, learning the foundations of arithmetic. The Montessori pedagogy has a broad selection of didactic material for this purpose. "The importance of this didactic material is that it gives a clear idea of *number*. For when a number is named it exists as an object, a unity in itself" (Montessori, 1914/1965). Before getting as far as actually using the material for arithmetic, the child knows the material's purpose. All material is therefore located in the common room and is used in different activities, it is heard, felt, seen and/or even smelled. It is in the children's social activities that the tools and material has its mediating function, it is when it is used that its purpose is determined (Säljö, 2005). The classroom should, however, never have too much material of this kind. One must make sure that the children have plenty of interesting work to do, but a too big selection can be distracting. Both the material and the lessons should be limited in the Montessori school (Prochazka, 1991).

When using a yardstick to measure the length of a board, or a map to find the way when driving, one uses physical material. Other mediating tools and inscriptions can, however, be difficult to understand and seem abstract to those not accustomed with them. The dynamics between the material, texts of different kinds and genres, and people's ways of acting towards it, is a very interesting example of the entire complex of problems regarding the changes in learning and the mediation's significance for different reasoning and proficiencies that people acquire (Säljö, 2005). 'Our superior mental abilities' that are represented by the talents to remember, to solve problems, to be creative, and other forms of will-governed actions can never be reduced to chains of conditioning. Nor can language be understood in this way. To understand and explain such abilities we must perceive the role that signs and tools, or instruments, play in human actions (Säljö, 2000). If we have access to different ways of thinking about the same thing, a variation in

perception, we must surely have better possibilities to meet a completely new situation than if we only have one way of understanding at hand (Emanuelsson, 2001).

Montessori compared the teacher's task in the classroom with the teacher in the gymnasium. The games master teaches how to use the parallel bars and swings and shows how to deal with weights. By using the objects the learners develop strength and flexibility. Montessori thought that the games master is not a lecturer that makes the learners powerful by teaching them gymnastics theory, but a guide that helps them use the tools to get strong. Some Montessori teachers use a special teaching method where the teacher first shows how an exercise is performed in silence, then the child can do it himself many times until it eventually does it right and one can see that the child understands. It is not until one with certainty knows that the child understands that you teach the child the words that explain and describe the activity (Prochazka, 1991).

The didactic material helps making the development of knowledge and proficiencies cumulative. They incorporate earlier insights and skills and they become parts of our everyday activities. Since the activities, to a great extent, have material characteristics they serve as a key to our ability to keep knowledge and skills across generations (Säljö, 2005). The examples of how we bridge the limitations that nature has given us can easily be multiplied. But, what is fundamentally important is that we use what Vygotskij originally called tools and tools in all that we do. This comment seems trivial but has in fact revolutionary implications for our view of ourselves, our way of thinking and our ways of learning. Montessori thought that the whole is important when teaching. If something is difficult, it should be isolated and practised until one feels certain of how it works before putting it back into its context again. The appropriation means learning how to master mediating tools of different kinds within the frames of institutionalised practice. Many of these tools are expressions of a long externalisation process that date back hundreds, even thousands, of years, and are crucial for how we use our intellect, our bodies and how we interact with others (Säljö, 2005).

## **How does one learn by using the material?**

Montessori's idea on learning is about starting from the concrete and move towards the abstract. The arithmetic material, for instance, gives children a concept of the figures and concrete concepts on arithmetical operation. Everything can be illustrated and dealt with using the correct material. The children will not have any difficulties absorbing the knowledge; tell the objects apart and their designation. This forms a foundation on which one can keep building, using the knowledge one acquire over time. Säljö writes that an important reason why learning is so difficult to grasp, is because it, to a very large extent, is invisible. Learning is a consequence of human activity and individuals' actions, but it is not easy to observe. We can draw conclusions that humans must have learned through the actions they perform or the problems they can solve, but it is still difficult to see exactly when and how it happens. Learning is often an inner and a silent process that do not show any external signs (Säljö, 2005).

If we want to understand the child's learning process it must be viewed in relation to the concrete task she solves. One must, according to Montessori, begin with observing children and then ask the question: What does the children want to learn? She speaks about developing a familiar

relationship between the observer and the observed. Through the observation, the child will want to be watched and the teacher will learn how to become a better pedagogy from the child. It is therefore perfectly natural to have one's starting point in the experienced variation, or possibly to experience variation when we intend to study other's learning and possibilities of learning (Emanuelsson, 2001).

Varied exercises are far superior to constant practice when changes are made to what is varied during the exercise (Carlgren & Marton, 2000). Differentiation is a characteristic of learning in the sense that learning through experiencing something in a particular way. Variation is a necessary condition for differentiation (Carlgren & Marton, 2000). What varies and what does not, what is mentioned and what is not, what varies at the same time and shows the order of what comes after the next, are crucial aspects of the education for the learners learning (Carlgren & Marton, 2000).

Montessori concludes with a general rule for the direction of the education of the senses. "The order of procedure should be:

- (1) Recognition of *identities* (the pairing of similar objects and the insertion of solid forms into places which fit them).
- (2) Recognition of *contrasts* (the presentation of the extremes of a series of objects).
- (3) Discrimination between objects very *similar* to one another" (Montessori, 1914/1965 s. 109).

To concentrate the attention of the child upon a specific sensory stimulus upon him, we should, as far as possible, *isolate* the sense; for instance, to obtain silence in the room for all the exercises and to blindfold the eyes for those particular exercises which do not relate to the education of the sense sight (Montessori, 1912/1964).

## **Conclusion**

Sensory exercise is about exercising the ability to differentiate and developing children's ability to experience certain sensuous qualities. The child learns through the four senses: hearing, feeling, seeing and muscle memory. With both Montessori and Gibson, as with Itard and Séguin before them, it is all about differentiating things through variation and contrast.

This is also a prominent characteristic in variation theory. Montessori thought that the child develops through the senses and Gibson & Gibson end their article from 1955 with: "But if one is concerned instead with the practical question of whether training can affect favourably a man's perception of the world around him, a very productive field for theory and experiment is opened up" (Gibson & Gibson, 1955).

## ***Acknowledgments***

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## **THE FROEBELIAN AND MONTESSORIAN METHODS OF EDUCATING YOUNG CHILDREN AS THE BASIS FOR EFFECTIVE SCHOOLING TODAY.**

By Francis Douglas, Director of Early Childhood Studies, Education Department, University College, Cork. Republic of Ireland.

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Note: The use of “he” in the text should be interpreted as “he” or “she”.

*In this paper Froebel’s and Montessori’s philosophy and methods of education are highlighted. This has been undertaken to emphasise the similarities rather than the differences in the two systems. The key components are then subjected to the criteria which research has shown to be necessary for effective schooling.*

According to Froebel, all created things proceed from the same source, which is Divine Unity, from God, and have their origin in Divine Unity, in God alone. Therefore, man was created in the likeness of God. However, man begins incomplete. God is absolute unity and provides the spirit which makes man seek that unity in his own life by interaction with his fellows and nature. Man comes to know himself as he participates in God’s universe. It is his nature to try and reveal himself. Through his own creative activity in this universe, man develops his full potential and becomes Godlike. Thus, for Froebel education was essentially a progress of growth, dependent upon self activity. Based on this notion of “unity of life”, Froebel realised that young children could only progress into intelligent human beings, and develop holistically by their own actions. According to Froebel, through self activity, by his own actions, the young child begins to realise his own spiritual nature and his own mind. He becomes conscious of the outer visible world, the world of nature and he becomes conscious of language. Froebel placed all emphasis on the child’s participation, his own activity as the agent of learning. Moreover, he develops the knowledge of himself in all his relations, and thus to the knowledge of man as such and to the knowledge of God (Froebel, 1837).

Froebel believed that the child’s own actions would be the seed of his intelligence, thus he argued that we should respect the child’s real nature and the laws of his development. Through the observation of the earliest grasping actions of young children as his attempt to make the inner outer and the outer inner ie: “by impressing the form of their own life on some external material, they would concomitantly develop their own nature.” (Horgan, 1987, p26). Froebel found that “education in childhood was simply a matter of allowing each child to unfold his nature at his own pace, through action on the external world of man and objects.” Froebel realised the importance of play as a means of engaging children in self-activity for the purpose of externalising their inner

natures. Thus play as a means of education for young children became important to his educational philosophy.

Froebel had been trained in his youth as a scientist and believed that observation of the child was the key to that child's education. It is interesting therefore that Montessori herself defines her method as follows: "What I have done is merely to study the child, to take and express what he has given me, and that is called the Montessori Method" (Montessori, 1946, p4). The revelations that came from the observations of the children in her care included tremendous mental concentration; a love of order and work; a desire to repeat activities many times; a preference for structured activities over idle play; an indifference towards rewards and praise; an innate sense of personal dignity; respect for others and an inner discipline resulting from normalisation through work. With respect to the development of their spirit she felt that there should, after the children had been normalised, be periods of silence in the classroom. "It is in silence and when movements are ordered that the inner sensitivity that is called "religious sense" or "spiritual sense" can be developed" (Montessori, 1948, p346).

'Normalisation' was the term coined by Montessori to describe the change that almost inevitably came about in a child's behaviour as a result of concentration on a piece of work. Character defects disappeared; inner discipline developed; it was as if a new child emerged. In Montessori's perception what actually happened was that the child's true personality was "allowed to construct itself normally" (Montessori, 1949, p.203). Many of the so-called deviations in small children, she felt, resulted from wrong treatment in the "early years". If outer conditions prevent this construction from occurring, a failure to organise the personality results. The resultant character defects, Montessori found, could be corrected easily and spontaneously before the age of six years through the process of normalisation, but only with great difficulty after this age. The phenomenon of normalisation, which she compared to the cure of adults by psychoanalysis, Montessori referred to as the "most important single result of our whole work" ( ibid, p.204). Evidence that work and freedom could cure defects of growth convinced her that work and freedom are normally needed for the child's development: "Only through freedom and environmental experience is it practically possible for human development to occur" ( ibid, p.91).

Both Froebel and Montessori agreed that the provision of a prepared environment was vital to the development of the child for as Montessori said:"The first thing his education demands is the provision of an environment in which he can develop the powers given him by nature ( ibid, p91)" Both Froebel and Montessori were very aware of the horrors of the school system at their time and this coloured much of their thinking. As Montessori said about discipline.

*If discipline is founded upon liberty, the discipline itself must necessarily be active. We do not consider an individual disciplined when he has been rendered as artificially silent as a mute and as immovable as a paralytic. He is an individual annihilated, not disciplined. We call an individual disciplined when he is master of himself, and can, therefore, regulate his own conduct when it shall be necessary to follow some rule of life (Montessori, 1912, p56)*

Montessori perceived the teacher as part of the prepared environment for the child. Like Froebel she saw the teacher as a guide and facilitator rather than as some one engaging in didactic teaching. "With my method the teacher teaches little and observes much; it is her function to direct the psychic activity of the children and their physiological development. For this reason I have changed the name of teacher to that of Directress" (Montessori, 1912, p 173). In common with Froebel, Montessori thought that it was vital that the teacher had to have the right attitude of mind for as the latter said: "A teacher, therefore, who would think that he could prepare himself for his mission through study alone would be mistaken. The first thing required of a teacher is that he be rightly disposed for his task" and he must prepare himself interiorly by "systematically studying himself so that he can tear out his most deeply rooted defects"(Montessori, 1936, p149).

Froebel's second most important principle concerned his love of nature and everything that is concerned with it. The very word "kindergarten"- the "child's garden"-shows the importance that he attached to it. In the traditional Kindergarten there would be a garden outside the school where each child would be given their own small plot of land in which to grow a variety of flowers and vegetables. There would also be facilities for pets, like rabbits, to be cared for, fed and observed by the children. Inside the school there would be a nature table with plants and seeds on display and, maybe, an oak tree growing in a pot and a goldfish bowl beside it. Froebel believed that children were like plants and that they should be allowed to grow at their own pace and reach their potential in their own time. "Growth takes time. The potential is the seed" he said and that "as every plant needs care, attention and nourishment according to its condition, so every child needs individual tuition according to its ability" (Liebschner, 1992, p42). According to Montessori, the child's natural affinity with nature is often lost amid the comforts of modern urban life. Efforts are made to recapture this through the teacher's own attitude of respect for plant and animal life. Care of plants and animals is stressed and the Natureshelf is an important feature of the prepared environment. The beginnings of classification are introduced with pictures of "animals that gnaw"; "animals that eat meat" etc. Pictures are supplied of various fruits; trees; "vegetables that grow below the ground" etc.

One of the key components of Froebel's educational system was play. He stressed the crucial role of play in the process of the child's development in terms of learning. He wrote that:"I studied the boy's play, the whole series of games in the open air and learned to recognise their mighty power to awake and to strengthen the intelligence and the soul as well as the body." (Froebel, cited in Liebschner, 1992, p52) and "...play is the fundamental medium and instrument through which the child, out of his own impulses and inward resources, effects his growth in every direction that is open to him..."( ibid, p18). Froebel also realised the importance of freedom in play. He thought that "each person, each child has a particular gift which will become visible if circumstances are right and freedom for expression of the same is given". According to Froebel such play, which springs from an inner urge encourages imagination and creative thinking and develops autonomy in younger children. In addition, he intended that play should lead to self discipline and to order and authority, for in play a child becomes aware of himself as an individual by the experience of freedom of choice, and becomes aware of the need for authority and order by his dependence on others and limiting factors of the material he uses. However, he also asserted the importance of the role of adults as a guide in play. In the laissez-faire situation, play does not show its potential because play can only function and develop when the rules are understood by the players, and the continuation of play depends on the frequent introduction of

new materials and ideas. Therefore, the interaction with adults in play is crucial to support and to maintain interest.(Liebschner, 1992, p 36).

Both Froebel and Montessori believed in structured play although Montessori defined this as “the child’s work”. Froebel and Montessori believed that it should not be left to chance. As Froebel said, it was through such organised play that children learnt much which was of importance to them and because of this it was a vital part of the curriculum. He believed that the educator should not only guide this play but, upon occasion, actually teach it. And he believed that without rational guidance childish activity degenerates into aimless play and that without guidance there is no free development (Froebel, 1837).

Froebel believed that through play, the natural growth of children was achieved in every direction. It is all based on his principle of unity. “The inner life of man, just like the outer world of nature, were both governed by the same laws, the laws of God. Just as God mediates through life in nature and man through his actions, so does the child in his play.” (Liebschner, p95) “while the child expresses his inner life in his play, he simultaneously opens up the world to his own understanding.” Through play, the inner life of the child, and his inner development could easily be expressed. (ibid,p97). Froebel advocated that in play the child discovers his possibilities of will and through exerting his power spontaneously, develops all his powers. He believed that play makes him master of himself. (Froebel, 1837). He provided children with many stimulating materials for the continuation of play.

Montessori maintains that during the first three years of life, the child unconsciously absorbs knowledge into his psychic life. “Impressions do not merely enter his mind; they form it. They incarnate themselves in him” (Montessori,1949, p25). While the first three years are given to the creation of faculties, the second three years of life are given to the development of these faculties. Through his absorbent mind, the child now brings into consciousness all that he has created in the first three years. It is as if the child, having absorbed the world by an unconscious kind of intelligence, now “lays his hands” to it ( ibid, p166).

It is during these first six years of life that the various “sensitive periods” come to the fore. Montessori defined these as the various stages in the child’s life when he finds himself attracted to certain elements in his environment to the exclusion of others. These sensitive periods relate to such acquisitions as language, movement, order refinement of the senses, interest in small objects, acquisition of culture, social development, reading and writing. The child’s attraction to these areas lasts only for a limited period and if the characteristics in question are not aquired during this time they are lost forever or can only be acquired with extreme difficulty. The acquisition of language is an obvious example of a sensitive period at work. A very important but less well known one is that for order which occurs during the first year of life and lasts until the third year. The infant is building his world from the elements of his environment and unless there is order in this environment he can be upset “ to the point of illness” (Standing, 1957, p127). The need for order explains many of the tantrums which occur in the young child and which can be dealt with effortlessly by the person in tune with the child’s sensitive period. So damaging can the effect of limiting a child’s activity during the sensitive period for movement that Montessori claims that one who is “a prisoner of the flesh undergoes more dramatic and profound sufferings than one who is blind or deaf and dumb” (Montessori, 1936, p101). Deprived of one of the senses, one can compensate to some extent through the keenness of the other senses but physical activity on the other hand is “intimately connected with one’s personality, and there is no



substitute for it”(ibid, p.101). She deplores the situation where tiny children are confined unnecessarily to prams, cots or playpens when every opportunity should be given for them to develop their motor skills. She decries the situation she witnessed in the traditional elementary schools where little children were restricted in movement, social interaction and activities.

The intense mental activity provoked in the child during these sensitive periods discredits the common assumption of traditional education that the child learns the same amount every day. Observations in Montessori schools have shown that the child learns most in a given area when going through the sensitive period for that particular area and often learns more in a few weeks than he might have learned in several months at the enforced tempo of traditional class teaching. A prime example is the explosion into writing that Montessori observed in the first *Casa dei Bambini* (Children’s House) in Rome before the first World War. Montessori’s preparatory exercises on preparing the hand led to a spontaneous explosion in writing, accompanied by an excitement and enthusiasm for this feat, which was to last several months and attract visitors from all over the world to visit the school. This skill was followed some months later by a realisation that words lie hidden on paper and that people can communicate with each other in this mysterious way. The parents of most of these children were illiterate. Froebel had his own system of sensitive periods which he called “Budding Points”, but they were not as comprehensive as Montessori’s (Froebel, 1837).

While Froebel accepted any activities as agents, which promised holistic development to young children, he nevertheless maintained that such development should be continuous. For the sake of this unity, based on his educational theory “unity of life”, he devised a series of games and occupations around religion, nature, language and the arts, and they were divided into three groups. The first group consists of “gifts” and “occupations”, which are intended to familiarise the child with inanimate things.” These consisted of balls, blocks for building, coloured tablets for design, coloured papers to cut and fold, pencils and paint, clay and sand. All were arranged in a series to capitalise on skills acquired by previous play experiences. Through such “gifts”, children are able to learn basic ideas about the relationship between objects: similarity and contrast, lightness and heaviness and so on. Also “gifts” allow the child to choose his occupation, so that he becomes aware of himself as an individual, as an independent being, and as a dependent, a part of a whole. (Liebschner, 1992). The “gifts” provided for the children’s play, but at the same time trained them in dexterity of movement and taught them something of the laws of nature.(Lawrence, 1969). The occupations, according to Froebel, move from points and lines to two-dimensional surfaces and to solids in three dimensions. They consisted of paper perforating, paper cutting and folding, interlacing, weaving, drawing and clay modelling. A significant idea behind the “gifts” and “occupations” is the importance of developing minds for examining things around them in a freely structured manner. The second group of activity is intended to be undertaken outdoors including various gardening activities and the care of pets which Froebel maintained led to empathy with plants and animals in children. The third group are the “Mother and Nursery Songs”, which were designed to have two aims: Firstly, to provide exercises for the child’s body and limbs and secondly, to provide a symbolic introduction to the abstract values in life.(Liebschner, 1992). Froebel provided the children with various stimulating activities mentioned above, to bring about self-education to them and enhance their imagination and creative powers and abilities. Froebel, like Montessori, considered the child as central and the teacher as a facilitator to support their continuous activities, for he valued a child’s interests and abilities as a means for development.

Froebel valued play as the main instrument for learning in his kindergarten (Austin, 1976). The “Gifts and Occupations”, Froebel believed, brought about an exploration in children, thus they became aware of the self, the outside world and the interaction of the two. Secondly, Froebel put emphasis on the importance of interaction with others not only with other children, but also with adults. He advocated the crucial role of the teacher as a guide to help foster the individual child’s development. According to Froebel, the observation of the child’s actions and endeavours is crucial, for the teacher is able to understand the child’s interests and abilities so that he sets appropriate “gifts” to suggest to the child further possibilities (Liebschner, 1992). At the same time, Froebel explained that working and playing with children was equally important, because it created a genuine bond between the teacher and the child, a bond which helps to promote respect for each other. Teachers, including parents, who participated in children’s activities, talked to them and with them, and who cared for their inner life, would be recognised by the children as a person to be trusted (ibid). Froebel, like Montessori, thus asserted the importance of a working relationship and trust between parents and teachers as an essential factor for the successful education of children.

According to Montessori the Directress when creating the Prepared Environment must keep certain essential elements in mind. That it must be attractive, display an inherent sense of order and be constructed to the child’s proportions. Child-sized furniture; low shelving and windows; toilet facilities, coat hooks etc. within easy reach of the child, all contribute to independence and security as does an orderly layout of apparatus.

Both Froebel and Montessori agreed that writing came before reading, indeed Montessori said that: “Written language can be acquired much more easily by children of four years than by those of six years of age----the time at which compulsory education usually starts” (Montessori, 1955, p94). Both, however, agreed that it depended upon when the child reached the “sensitive period” or “budding point” for writing and that this would differ from child to child.

Mathematics was a key concern for both of them with Froebel of the belief that his first “gift” a woolly ball should be presented to the infant at the age of approximately three months and the wooden sphere, the first part of his second “gift” at approximately six months (Froebel, 1837). Montessori believed, like Froebel, that the mathematical mind is active from birth. She bases this belief on the fact that exactitude exerts itself on every action that a very child performs and in the craving by this young child for order in everything. (Montessori, 1949). Montessori pointed out that mathematics deals with abstractions and abstractions cannot be taught. Only by presenting the child with concrete objects can these abstractions be materialised. She said that the process of abstraction can be facilitated by two processes; namely, absolute clarity in the concrete and a certain maturity of mind on the part of the child. Repetition is essential in this process and the operations must be repeated continuously until the knowledge is absorbed into the unconscious mind. Critics sometimes point out that a child in a Montessori school is over-dependent on concrete materials, not realising that concrete materials merely act as a “crutch” until the child reaches the point where, through constant activity and exercising of the senses, he can with confidence, and effortlessly, discard such materials and write out mathematical operations unaided.

The importance of helping the young child to develop his or her imagination is an area to which Montessori devotes a great deal of attention. She makes a very clear distinction between imagination and fantasy. The latter is something natural to the young child who is unsure of the

boundaries of reality. In the natural course of development this stage is outgrown but very often adults prolong this phase for their own amusement, through fairy tales, the Santa Claus myth etc. Education, Montessori insists, should be directed to intelligence and not to credulity. She states: "It is one of the careless errors of our day to arrest artificially a stage of development for our amusement (Montessori, 1917, p263). Imagination, on the other hand, is a "construction firmly allied to reality" (ibid p. 248) and can only have a sensory basis. Contact with the real world is the key to its development. Montessori did not, as she is often accused of, object to fairy stories but she believed that they should not come before a child is well anchored in reality, which is generally about seven years of age.

Montessori, like Froebel, devised a system of education from birth to adulthood. Montessori was very much ahead of her time in her attitude to the care of the newborn. She deplored the hostile conditions to which the child was subjected at birth in terms of bright lighting, loud noises, separation from his or her mother. She realised that: "hardships and privations in the first month of a child's existence can influence the whole course of his future development" (Montessori, 1936, p.25).

The image of dogmatism, associated with Montessori by many of her critics, is not consistent with the willingness with which she revised much of her theory and practice in the light of what emerged from her observations of young children. She insisted that "the highest honour and the deepest gratitude you can pay me is to turn your attention from me in the direction in which I am pointing---the child". (Standing, 1957, p.59).

There is a considerable literature on the differences between Montessori and Froebel but upon closer examination these often turn out to be the result of the reinterpretation of the Froebelian system for larger classes which was much practised in the second half of the nineteenth century and the first half of the twentieth. For example it is often said that in the Froebelian school the class are treated as a whole whereas in the Montessori school the unit of teaching is the individual child but Froebel himself, like Montessori was adamant that the child's work should be tailored to that child. It might be fair to say that Montessori has a greater faith in the spontaneous intellectual and social powers of the child whereas Froebel requires greater guidance from the teacher. It is also true that the "gifts and occupations" are different from the Montessori materials and apparatus but both are arranged in ascending order of complexity and nothing is introduced until the child is "ready". We have already touched on the topic of fairy tales and the child's imagination, suffice to say that both believed in the importance of the imagination. Some commentators have referred to the difference between the two philosophies as being between "Dolls Houses" and "Children's Houses" but this is just an extension of what we have already said about the imagination. In the early years Montessori places a very heavy emphasis on teaching the children only about reality---real cups of tea and not pretend cups of tea---as she makes the point that human beings cannot productively exercise their imaginations until they have grasped reality. Our ordinary social environment has been made for adults, and is not suitable for the creative activities of the child. The child thus escapes into make-believe. If you prepare an environment based on the child's needs you will find that he or she will be occupied with "real" things.

Compared to the Froebelian or Montessorian classroom the fact that the child in the traditional classroom moves around very little fits the Lockean model of the child. Locke viewed the child as a 'tabula rasa' or 'blank slate' on to which knowledge could be imprinted, thus in the Lockean

model the child is required to take in new information and commit it to memory. It is interesting to note that behavioural psychologists believe that the children do this because they are rewarded or punished, as behaviourists are not concerned with what goes on inside our heads, only with the outcome. Movement is not important to learning in this view. In fact, it is easier to pour things into an empty vessel or to write on “blank slates” if children are still!

Movement and cognition are closely intertwined. Our brains evolved in a world of movement in which we did things, not a world in which we sat at desks and considered abstractions. Piaget would agree with Froebel and Montessori that thinking seems to be expressed by the hands before it can be put into words (Ginsburg and Oper, 1979). Children better imagine how objects and substances move when they carry out actions that stimulate those movements. In recent years there has been an explosion of fascinating research on the connection between movement and cognition. One study asked people to judge the angle at which a wide and a thin glass, each containing the same amount of imagined water, would pour. People were often wrong when they simply thought about the problem---they judged that water would pour out of both glasses at the same angle. However, when they were allowed to tilt actual glasses of imaginary water, even with their eyes closed, they correctly tilted the narrow glass farther than the wide one (Schwartz and Black, 1999). Thus, when cognition is aligned with movement, more accurate representation results. This finding implies, as do the Froebelian and Montessorian methods of education, that movement enhances learning.

Both the Froebelian and Montessorian systems allow the child an element of choice. Research in psychology suggests that freedom and choice within carefully defined limits are linked to better learning outcomes. For example, people have a basic need for autonomy (Ryan and Deci, 2000). They like to feel that they have choices and they flourish if they do. However, too much choice can be debilitating and serve to undermine one’s sense of control (Schwartz, 2004). In one experiment, seven to nine year olds were asked to solve anagrams, and one group was allowed to choose from among six categories, such as animals, foods, or professionals (Iyengar and Lepper, 1999). A second group was told the experimenter had chosen their categories, and a third was told that their mothers had made the choice. [The anagrams chosen for the second and third groups were in fact identical to the choices made by the first group]. There were two significant findings. (1) The children who had chosen their own category solved twice as many anagrams as the children who thought that their mothers or the experimenter had chosen them. (2) During an optional free-play period after the initial anagram solving session, the children who had chosen their own categories spent much more time freely choosing to solve anagrams than did children whose category had been chosen for them. Free choice was thus associated with both an initial level of performance and with task persistence, which undoubtedly would lead to additional performance gains over time.

The best type of learning occurs when the learner is interested. Interest can be personal, as when the individual has a fascination for ladybirds or dogs, or it can be situational whereby large numbers of people are naturally interested in a topic, such as football. As a result of close observation with respect to the child’s “budding points” or “sensitive periods”, both Froebel and Montessori learnt to captivate the children’s interest. As the sensitive period for language occurred the Montessori teacher concentrates on new words, labels and pre-writing exercises for example. In terms of specific personal interests both Montessori and Froebel believe that children should be encouraged to follow that which fascinates them. This allows more general learning to

accrue through pursuit of these individual interests. It is obvious that an obsessive interest in frogs will allow the child to learn about biology. More generally, however, such a child will also learn how to research information, write notes and reports, practise penmanship, spelling and punctuation, as well as engage in the skills of realistic drawing. The child might also use frogs as a springboard to study sound (beginning with croaking) or adaptation (how different species of frogs have adapted to different environments). One role of the teacher in this situation is to connect the child to the various areas of the curriculum through the child's personal interests. Hence, the teacher ensures that the child's education is broad despite the child's narrow enthusiasm. Thus, rather than "learning by rote", children following Froebel's and Montessori's curriculum study their own innate interests.

Music, Art and Creativity in all subject areas are essential parts of the Froebelian and Montessorian systems. Both methods of education encourage children to think divergently. In other words, children are encouraged to think of novel and unique answers to problems rather than just concentrating on the 'correct' answers. Divergent thinking contributes to, but does not fully explain, one's creative accomplishments (Runco, 1992; Torrance, 1988). Recent multi-component perspectives, such as the investment theory of creativity, specify that a variety of cognitive, personal, motivational and environmental resources continue to foster creative problem solving. This theory looks very promising in terms of both its existing empirical support and its suggestions for fostering creativity (Sternberg and Lubart, 1996; Lubart and Sternberg, 1995). Both the Froebelian and Montessorian methods of education incorporate this multi-component approach into their philosophies. Children's intellectual curiosity is encouraged and they are allowed the freedom to pursue their own interests in depth.

Extrinsic rewards, such as gold stars and sweets, are believed by both Montessori and Froebel to disrupt the child's concentration. Sustained, intense periods of concentration are central to both methodologies. It is not unusual for older children to work on a project for several days at a time and even young children can be seen concentrating for thirty minutes, or more, at the same task. A good deal of research suggests that interest in an already loved activity is best sustained when extrinsic rewards are not part of the picture. For example Lepper et al (1973), placed new sets of markers in classrooms of three to five year olds and watched to see which children used them a lot. Heavy marker users were then brought, one at a time, to a testing room, and a third of them (Group A) were immediately shown a "Good Player Award"---a card with a big gold star and a red ribbon. They were asked if they would like to receive a Gold Player Award, and Group A all said "yes". They were told that all they had to do to win the award was draw with the markers. After each child had drawn for six minutes, a Good Player Award was given to them with great fanfare. The next third of the children (Group B) were allowed to draw with the markers for six minutes and were then unexpectedly given a Good Player Award, while the final third (Group C) just drew for six minutes without any award being mentioned or given. A panel of judges who did not know which group the child was in had the task of rating each child for the creativity in their drawing. Drawings done by children who expected awards were judged to be significantly lower in quality than drawings done by the other two groups. A few weeks later, when the classroom was observed for marker use, children who had been given an award used the markers much less than they had done previously, and half as much as the other children. Engaging in a well-liked activity with the expectation of a reward led to reduced creativity during that activity and to decreased voluntary participation in that activity later.

In many primary schools, the teacher gives the children information. The children rarely learn from one or other or directly from materials. Tests, problems and exercises are usually undertaken alone. In many pre-schools the children usually play in groups. This is the opposite of the Froebelian and Montessorian systems where, based as they are on the careful observation of children, pre-school children are mostly involved in working on their own or in adult/child interaction while older children are involved in co-operative activities with mostly peer interaction. This is strongly supported by research, for example Piaget and Vygotsky both assigned peers a prominent role in development. Piaget argued that peers are important because by presenting different ideas, they create a state of disequilibrium in the child. The child tries to “accommodate” to this disequilibrium and in so doing develops. Thus peer involvement becomes an important engine for development (De Lisi and Golbeck, 1999; Piaget, 1926). Vygotsky argued that learning occurs in a “zone of proximal development”, which meant that tasks that the child could not yet accomplish alone could be accomplished with the help of another who was more advanced. In his view, slightly more advanced peers serve as important leaders in development (Hogan and Tudge, 1999; Vygotsky, 1978).

In a Froebel or Montessori school, if they are true to their founder’s spirit, the children, rather than learning largely from what the teachers and the textbooks say, learn from “doing”. As a result of learning by doing, rather than merely hearing or writing, their learning is situated in the context of actions and objects. For example by physically separating learners from the sites where their knowledge will be applied, traditional schooling reduces both contextual support and motivation for learning. In an interesting experiment with three year olds Istomina (1975), found that those children who were told to memorise lists of items to be purchased in a shop were far inferior to those children who played “shop” and were asked for the same items. Indeed those that played “shop” remembered twice as many items as those that did not and it was concluded that this was entirely the result of the meaningful context in which the learning took place.

Both Froebel and Montessori suggest that adults should provide clear limits but set children free within those boundaries. Macoby and Martin (1983) illustrated this when they put forward four styles of parenting---authoritarian, permissive, neglecting and authoritative. They say that it is only the latter which is characterised by being high on control, high on discussion, high on expectation and high on warmth and that such adults tend to have very clear easily understood rules which they enforce. However, within these rules the child has considerable freedom (unlike the child in the authoritarian setting). Children of authoritative parents are clearly the best off, high in achievement motivation and in self-control. They tend to be more popular, competent, and self assured than other children. Children of authoritative parents also show high levels of social responsibility. In encouraging this type of control both Montessori and Froebel showed great insight for their time.

Research in psychology suggests that order is very helpful to learning and development and that children do not fare so well in less ordered environments. For example, with respect to family organisation, regularity and family routines are related to positive outcomes in children. Fiese (2001) asked parents of four year olds to fill out an extensive questionnaire about their family routines and rituals in a variety of circumstances, including dinnertime, weekends, and cultural and religious events. Two principle results emerged from the responses: regularity and predictability of family routines, and the degree to which a routine had symbolic significance. These children’s academic competence was also assessed four years later at age eight. The results

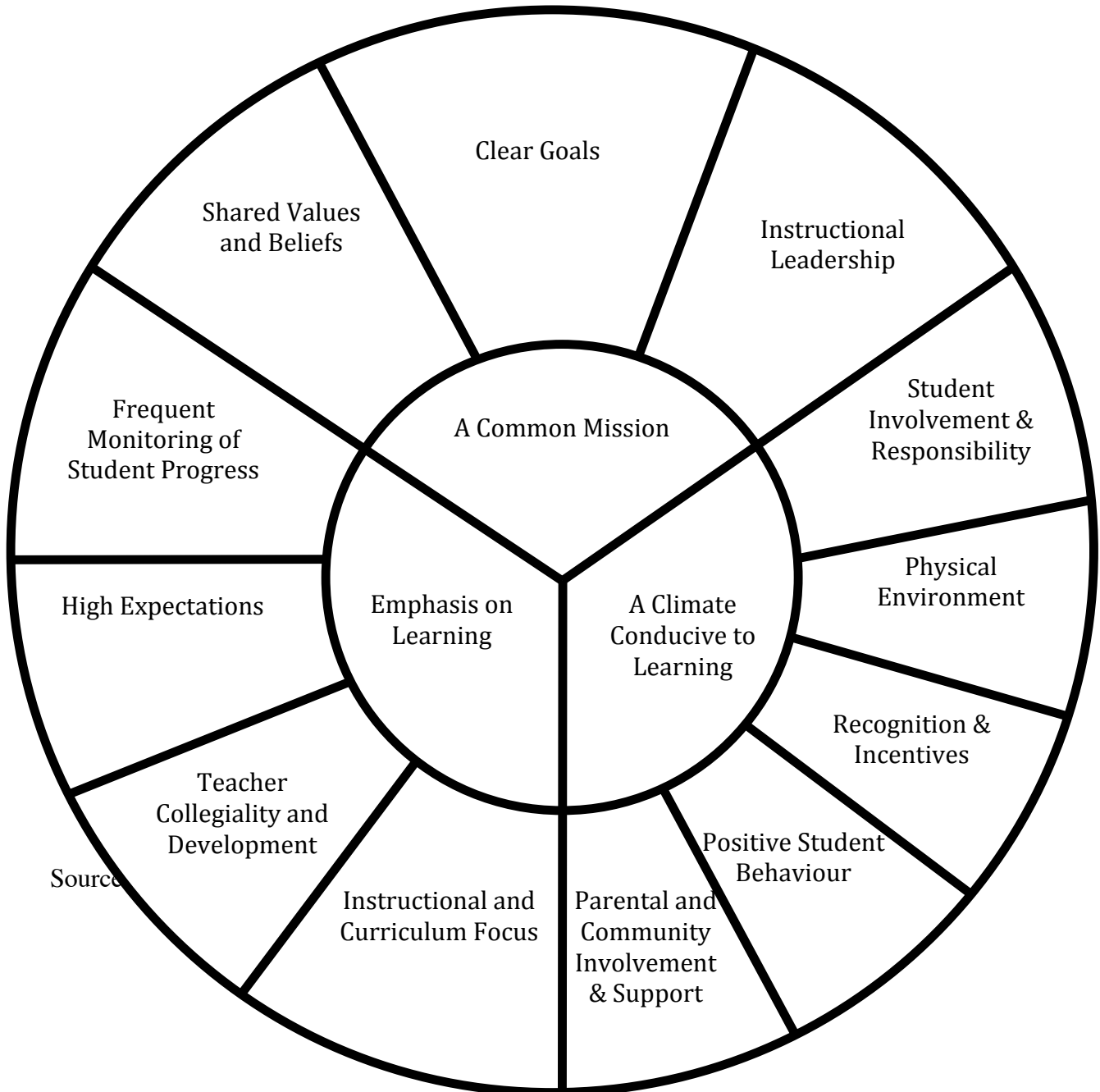
indicated that both predictability and symbolic meaning of routines at age four were significantly related to these children's overall academic achievement at age eight. As we have seen both Froebel and Montessori placed a high emphasis on order and predictability.

To summarise, the key components of the Froebelian and Montessorian methods of education as discussed above are: First, movement is an important component of cognition. A child's intellectual performance is reduced by sitting still and being "tied" to a desk. Second, an element of choice for the child is important, too much choice can be debilitating. Third, the best type of learning occurs when the child is interested. Fourth, children who are allowed the freedom to pursue their own interests in depth will produce creative solutions to problems. Fifth, extrinsic rewards disrupt the child's concentration and are not necessary, indeed they can act negatively on the child's motivation. Sixth, group work can be highly beneficial to learning particularly in the primary school. Seventh, children learn best by 'doing'. Eighth, there should be 'freedom within limits'---there must be rules and they must be obeyed. And ninth, order in the environment is beneficial to children.

Day et al (1993) produced a list of nine factors which they say are fundamental for pupil learning [They also happen to be very similar to those above]. The first of these is that the curriculum is structured and can be tailored to the needs of individual children. The second is that the pupils have the opportunity for choice and the organisation of their own time. The third is that the children are happy. The fourth is that the children are involved rather than passive. The fifth is that the activities which are promoted should take place both inside and outside the school walls. The sixth is that the school should not denigrate difference and should accept successes other than the merely cognitive or "academic". The seventh is that the school should value self-learning and emotional growth and evaluate this positively rather than negatively. The eighth is that the school must make its values clear and work in partnership with the community. And the ninth is that the school must orientate itself to the future as well as to the past. There is no reason why a good Froebel and Montessori school cannot achieve all these aims.

Giving greater detail is the following chart that gives the elements which characterise effective schools:

# Characteristics of Effective Schools





Good Froebel and Montessori schools have clear goals. They have instructional leadership. They have student involvement and responsibility. They are concerned about the physical environment. They give recognition (although they do not dwell on incentives). They encourage positive student behaviour. They involve parents and the community. They have a very clear instructional and curriculum focus. They encourage teacher collegiality and development. They have high standards and expectations. By their nature they involve constant feedback and evaluation from, in many cases, self-correcting exercises. They promote shared values and beliefs from following their philosophy. They have a common mission. There is an emphasis on learning and they do produce a climate conducive to learning.

From what has been said it has to be concluded that both Froebel and Montessori schools, if well run, are effective schools according to the definitions given above.

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## 2. Announcements

### **Maria Montessori's Collected Works**

For more than ten years, the teaching and research centre for Montessori Pedagogy of the University of Muenster has been working on an academic edition of Maria Montessori's (1870-1952) collected works in German under the guidance of Prof. Dr. Harald Ludwig in cooperation with the publishing house Herder and the Association Montessori Internationale (AMI) in Amsterdam. In twenty-three volumes, this edition provides the German reader access to virtually the whole of Italian educational theorist Maria Montessori's published work, as well as portions of her extensive previously unpublished writings. These unpublished writings consist predominantly of notes on her numerous lectures from all over the world, which took place over the span of four decades.

The new Montessori edition is based upon the existing scientific Montessori texts, which were edited by Prof. Paul Oswald and Günter Schulz-Benesch and published by Herder.

The texts at hand draw upon an even broader basis of scientific sources and – where necessary – are supplemented with additional Montessori texts in an appendix. This appendix accounts for a more sophisticated understanding of the particular topic.

The first volume of the new edition, "The Discovery of the Child," will be published in the spring of 2010. The volume consists of a German historical-critical edition of the fifth Italian edition of Montessori's first publication, "The Method of Scientific Pedagogy applied to Child Education in the Children's Houses" from 1909, which was released under the changed title "The Discovery of the Child" in 1950.

Additionally, footnotes and an appendix containing longer passages will be included to document the numerous modifications Montessori made on this basic work over the course of four decades. These provide the reader an accurate picture of the development of this great educational theorist's pedagogical ideas from the beginning of her career until her later days. Furthermore, they reflect the concurrent changes in scientific thought and society.

Alongside this classic work of educational literature, which has been translated into more than twenty languages to date, Montessori's "Handbook of Scientific Pedagogy" will also be published in the spring of 2010. This edition will be based on the second Italian edition from 1930. In the autumn of 2010 the volume "Education and Society" will follow, which contains the socially critical writings by Montessori from 1896 to 1915. Until now, these writings have been difficult to gain access to and were largely published only in Italian and English.

In this edition, numerous papers by Montessori which have not been fully available to the German readership until now will be published in German for the first time. These include Montessori's early writings on anthropology (1903-1910), her "Californian Lectures" (1915), her collection of lectures "The Child in the Family" (1926), her mathematic didactic writings (1934) and her contributions to the concept of a "Cosmic Education" (1935-1950).

Alongside Prof. Dr. Harald Ludwig (University of Muenster) the following scholars belong to the editorial team of the edition: Prof. Dr. Christian Fischer (University of Muenster), associate professor Dr. Michael Klein-Landeck (University of Hamburg) and Prof. Dr. Volker Ladenthin (University of Bonn). The publication of individual volumes was taken on by further educational theorists from Germany, Austria and Switzerland.

The realisation of such a demanding project in such difficult economic times is possible due to the dedication of the publishing house, the cooperation of the Montessori Centre of the University of Muenster with the Association Montessori Internationale (AMI, Amsterdam) and the Opera Nazionale Montessori (ONM, Rome). In addition, numerous Montessori organizations lent their financial support in the production of this edition, including the ‘Deutsche Montessori-Vereinigung e.V.’ [German Montessori Association], ‘Deutsche Montessori-Gesellschaft e.V.’ [German Montessori Society], ‘Montessori-Dachverband Deutschland e.V.’ [Montessori Umbrella Organization Germany], ‘Stiftung Montessori-Paedagogik – Reformpaedagogik – Wissenschaft’, [Foundation Montessori Education - New Education – Science], Nienhuis Montessori (The Netherlands).

Several individuals have also contributed financial donations, which made the printing of the edition possible. Other organizations have announced their willingness to support the project. With the publication of three to four volumes per year all volumes of the edition should be available by 2016.

*Harald Ludwig*

## **A presentation of the Montessori Society M.E.R.**

The Montessori Society M.E.R. was, as well as the network MORE (Montessori Research Europe) founded in the context of the European Centenary Montessori Conference at the Stockholm Institute of Education<sup>1</sup> in November 2007. The society was formed as a sister organization to network M.E.R. (Montessori Education and Research) and is operated as an unincorporated association. The idea to form a society was to create a forum for educational researchers and lecturers in Montessori Education as well as for Montessori educators who are linked to practical activities in preschools and schools, but also open to every other persons interested in discussing, debating and developing Maria Montessori's pedagogical ideas and to illuminate research and promote the development of Montessori pedagogy in Sweden.

The main activity of the Society M.E.R. is to host café meetings (approximately one café a month, free for society members) at different locations in Sweden. Current issues are discussed and insight into educational research that in different ways may affect the Montessori pedagogy in preschools, schools and higher education are provided at the café. Society members have great opportunities to influence the issues. Further activities provided by the Society M.E.R. are full-day seminars and a journal published ones a year.

### **Issues presented and discussed at the different café meetings:**

A research report by Margareta Johansson and Elizabeth Plöjel, Lund University with reflections on their academic experience in the light of the educational philosophy of Maria Montessori and Martin Buber.

Annika Åkerblom, Lund university shed light on the interplay between language and thought in children of different ages based on her thesis.

"Montessori Education in the 2000s". Questions like, to what extent, (and if so how), there is a need to adapt exercises of practical life to the 21<sup>st</sup> century.

The use of computers in Montessori schools in relation to the research done by the Norwegian lecturer Arne Trageton.

The importance of a positive view on children with focus on students' resources and capabilities were highlighted from a Journal posts by paediatrician and author Lars H. Gustafsson.

The importance of a positive view on children with focus on students' resources and capabilities were highlighted from a Journal posts by paediatrician Lars H. Gustafsson.

The relationship between Montessori and Dr. Mel Levine's thoughts on children's different learning styles. Helena Jacobsson and Carina Sigala, teachers from the school Casa Montessori School, Gothenburg, talked about how they combine these ideas in their work.

Evaluation and assessment in relation to Montessori's principles. The possibility to replace grades with narratives (written comments) and different views on how Montessori's opinion could be interpreted and applied.

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<sup>1</sup> From 2008 incorporated into Stockholm University

Experiences from the Montessori Training Center in Tanzania presented by Josefine Andersson, Malmö university, teacher student and Montessori teacher.

Indian children's understanding of mathematics presented by Ingrid Dash. Lund university

Buråsskolan in Gothenburg a presentation by their Montessori teachers about theory and practice in school activities; the worries, joys and visions.

Montessori Erdkinder Maria Montessori's ideas expressed in From Childhood to Adolescence. Ingrid van't Hooft, neuropsychologist at Astrid Lindgren Children's Hospital in Stockholm, presented a neuropsychological perspective on adolescent brain and the needs of the teenager.

The possibility of creating a positive learning environment based on Montessori philosophy when educational policy and Swedish schools in general emphasize the need of grades, tests, homework etc.

How to develop the Montessori pedagogy through aesthetic learning processes. Benedikte Sundström Espreri gave a lecture about dance in Montessori pedagogy.

## Full day seminars

Stockholm in May 2008 a seminar about Cosmic education and a sustainable environment by Phil Gang.

A seminar will take place in February 2010 in Malmö with focus on the child 0-33 years of age and the United Nations children's convention.

## Publications

A journal is published ones a year, with the first number 2008, with interesting subjects related to Montessori pedagogy.



**BRIEF REPORT OF THE MONTESSORI CONFERENCE, ROME, UNIVERSITY OF  
ROMA TRE, NOV. 27<sup>TH</sup> 2009.**

On 27 November 2009, was held in Rome, at the Aula Magna of the University Roma Tre, the International Conference **CHILDHOOD AND ADOLESCENCE. For an educational tailored intervention.**

The meeting was organised and sponsored by the Centre for Montessori Studies, Department of Educational Design, University of Roma Tre, in connection with the publication of the new Italian edition of Maria Montessori's book "From childhood to adolescence".

The conference brought together Italian and foreign experts to compare studies and experiences considering the educational responses that Montessori pedagogy is able to offer in order to address the delicate educational and psycho-pedagogical issues arising to the attention of teachers, educators and education agencies about the development periods of childhood and adolescence.

The Montessori model is receiving increased attention in most European countries and beyond: What are its most actual elements? What answers it can provide to the educational needs of our time? What kind of learning environment and educational project it proposes for children and adolescents? Reports submitted intended to provide well-presented thoughts on this subject discussing studies and experiments conducted within different cultural organizations - universities, schools, research institutions and cultural organizations – each of them bearing a contribution to the pedagogical debate with its own investigation instruments and analysis method.

The conference speakers were: Clara Tornar (*Childhood and adolescence: observations based on the Montessori text*), Grazia Honegger Fresco (*Educational continuity within difference: from "biological newborn" to "social newborn"*), Eva-Maria Ahlquist (*Learning in the Montessori adolescence environment*), Cristina Stringher (*Learning how to learn: from Montessori a modern lesson*), Paola Cosolo Marangon (*Adolescence is conflict. The educational effort of adults facing the frailty of adolescents*), Michaël Rubinstein - Mirjam Stefels (*Starting Montessori secondary schools: opportunities and obstacles*), Heidi Niederkofler (*The Montessori experience of our middle school as educational continuity with primary school*). Consecutive translation from English to Italian by Monica Salassa.

On the website of the Centre for Montessori Studies, at [www.montessori.uniroma3.it](http://www.montessori.uniroma3.it), English abstracts are available.

**CeSMon - Centro di Studi Montessoriani, CeSMon - Centre for Montessori Studies**

E-mail: [csm@uniroma3.it](mailto:csm@uniroma3.it)

Website: [www.montessori.uniroma3.it](http://www.montessori.uniroma3.it)



### 3. Some additional news

The Theatrehaus Gessnerallee Zürich is performing “Robinson oder die Insel der Visionen”, Robinson or the Island of Visions. Different pedagogical ideas are discussed and the Montessori pedagogy will be one of them. The premiere took place on the 17<sup>th</sup> December in Theaterhaus Gessnerallee Zürich. [www.gessnerallee.ch](http://www.gessnerallee.ch) The theatre will have a symposium on the 8th and 9th of January with the title “Teater träumt Schule – ein Symposium zur Schulsituation heute“, Theatre dreams school – a symposium about the school situation of today, with lectures, workshops and panel discussions.

### 4. Other information

The XI. Congress of Montessori Europe will be from 01. – 03. October 2010 in Bad Honnef (near Bonn), Germany. “From Childhood to Adolescence” – Montessori and Secondary Education. More information will be available step by step on our homepage.

### 5. Closing words

We would like to remind readers that, as MORE does not yet have its own website, back issues of the newsletter are available at [www.unimuenster.de/Montessorizentrum](http://www.unimuenster.de/Montessorizentrum) or <http://egora.uni-muenster.de/ew/mz>

As announced in issue 2-2008, we had a plan to meet at the 2009 in connection with the MONTESSORI EUROPE CONGRESS, which was organized by MONTESSORI EUROPE In October 2009 in Cracow, Poland. Unfortunately we did not have the opportunity to meet. We hope instead that there will be a possibility to meet in Germany in October 2010. If you plan to participate in the meeting, please inform Prof. Dr. Harald Ludwig, University of Muenster, Germany: [ludwich@uni-muenster.de](mailto:ludwich@uni-muenster.de) or [haraldludwig@hotmail.com](mailto:haraldludwig@hotmail.com). If there are enough interested members of our network, we will try to organize the informal meeting in Germany.

We wish you a Happy Christmas and a Happy New Year  
With kindest regards

Eva-Maria Ahlquist  
on behalf of the network M.E.R

Dep. Didactic Sciences and Early Childhood Education  
Stockholm University  
SE-106 91 Stockholm  
Direct phone: +46 8 12 07 62 58  
Mobile phone: +46 70 334 55 48