



Montessori Curriculum

0 – 3 years

Acknowledgement:

The South African Montessori Association gives their sincerest gratitude to Indaba Montessori Institute (IMI) as an affiliate to Association Montessori Internationale (AMI), for their generous sharing and permission to use the AMI curriculum, as documented and aligned by Montessori Australia Foundation (MAF) curriculum birth to three years.

DISCLAIMER:

Please note that use of this curriculum should not be taken to imply that SAMA, MAF or AMI has in any way endorsed a school, nor should use of this curriculum be regarded as a substitute for Montessori training at the appropriate level.

INTRODUCTION

This curriculum reflects an international effort by respected Montessorians which is now available for use by SAMA member schools. It is a most welcome and detailed document that benefits all.

In terms of the Rights and Responsibilities of Independent Schools, drawn up by the Department of Basic Education in collaboration with the National Alliance of Independent Schools (NAISA), Independent Schools enjoy the right to offer curricula other than the National Curriculum (NCS). In order to support SAMA's work in advocating for and defending the right of our schools to offer a Montessori curriculum, it is necessary that Montessori schools base their practice on a comprehensive and clearly structured, formal curriculum document. We look forward to our members embracing this adapted version.

In our use of this curriculum we will always respectfully refer to it as the *Montessori Australia Foundation (MAF) National Montessori curriculum* birth – 3 years, because it is their work and not ours. In terms of our agreement with IMI, use of this curriculum may not be taken to imply that our schools are MAF or AMI accredited.

We are proud to belong to the international Montessori family in sharing a global curriculum which represents all children wherever we are.

Kym van Straaten

President of the South African Montessori Association

Principle 1:

Classes in Montessori Schools are mixed-age and non-graded.

- ☐ Mixed-age classes comprise at least three-year groupings corresponding to the Planes of Development: 3 – 6; 6 – 9 and 9 – 12 or 6 – 12; 12 – 15 and 15 – 18 or 12 – 18.
- ☐ Mixed-age groups are not correlated to grades, nor are they divided in other ways according to achievement levels or normative standards.

The 0-3 sub-plane is divided as follows:

- Infant (Nido) groups: Approximately 3 months (or older) to when the child is walking well (about 12 – 18 months; and
- Toddler Communities: From when the child is walking well (about 12 – 18 months) to about 2½ or 3 years.

Principle 2:

Montessori schools accommodate an extended period of uninterrupted self-chosen activity – a period during which children can choose their own activity and work undisturbed for a minimum of three hours.

Principle 3:

Rewards and Punishments are not used in a Montessori environment.

Principle 4:

A prepared environment is a critical component of Montessori Pedagogy.

The prepared environment

- ☐ Serves the developmental and pedagogical needs of the children using it;
- ☐ Supports freedom of movement, speech and association;
- ☐ Supports free choice of activity;
- ☐ Facilitates normalization (3-6), adaptation (6-12) and valorisation (12 – 18);
- ☐ Includes a full range of Montessori materials appropriate to the age for which it is prepared.

Principle 5:

The adults in the Montessori environment exhibit and apply the principles of Montessori pedagogy through

- ☐ A disposition of respect and patience towards the child;
- ☐ An ability to balance the principle of non-intervention while at the same time not abandoning the child;
- ☐ Trust in Montessori principles, methodology and pedagogical aims;
- ☐ Seeing the role of the adult as primarily observer, scientist and interpreter of the environment rather than as a teacher in the conventional sense;
- ☐ Guiding the child to normalization and development appropriate to each Plane of Development.

Principle 6:

Montessori schools implement the SAMA Montessori curriculum for ages 0 – 12.

*Principles adopted at the 2011 SAMA AGM/ Amended at the 2016 SAMA AGM / Amended 2018.

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Montessori National Curriculum: Overview

Introduction

The Montessori National Curriculum brings together in one document the educational goals and curriculum content applied in Montessori schools throughout Australia to support the development of infants, children and young people from birth to adulthood. This is an international curriculum shared by Montessori schools throughout the world. The curriculum is introduced with an overview of the pedagogical principles that guide practice in Montessori schools, principles that emerged from the pioneering research and insights of Dr Maria Montessori.

In 1907 Dr Maria Montessori established a classroom in Rome for children left unattended while their parents worked as day labourers. Within a very short time this classroom became famous around the world because these children, with apparently so few prospects, very quickly became socially and intellectually independent, not through adult coercion, but through their own activity, interest and effort. The learning environment designed by Dr Montessori to enable these children to achieve their potential in such a joyful way was the culmination of years of study and innovation in the fields of medicine, psychology and anthropology. Building on the success of that first classroom, over the last hundred years Montessori educators all over the world have continued to observe and study children and young people, and to design learning materials and environments carefully tailored to their developing interests and needs. The breadth and depth of accumulated knowledge shared by Montessori educators across time and space is perhaps unique in the field of education. Significantly, in recent years, research in the fields of psychology and neuroscience has confirmed many of Dr Montessori's insights (Elliot 2006: 30; Lillard & Else-Quest 2006; OECD CERI 2007).

In the Montessori view, the drive to become independent propels human development. Montessori education aims to provide children and young people, from birth to maturity, with learning environments designed to support the development of social, intellectual and ethical independence. For this reason, Montessori education is often described as 'education for life'. The foundation principle of the Montessori approach is that children learn best when they learn through their own freely chosen activity. Evidence gathered in Montessori schools throughout the world over the last century confirms that children who have the opportunity to learn in this way become self-confident, self-reliant and self-disciplined, with a life-long love of learning and the desire and capacity to contribute to the wellbeing of their social group. They also develop the ability to move with coordination and precision, and the ability to concentrate and to complete tasks independently with both perseverance and creativity.

Australian educators attended the first Montessori training course held in Rome in 1913 and returned to Australia to establish Montessori schools in several states. Since that time Montessori schools have continued to flourish in Australia and today are operating throughout the country (O'Donnell 1996; Peterson 1983). The continuation of Montessori education in Australia over the last hundred years and into the future provides Australian children and their families, and the wider community of Australian educators, with the opportunity to benefit from an internationally-recognised educational tradition that continues to contribute to the wellbeing of infants, children and young people everywhere.

While the Montessori curriculum is international, the curriculum presented in this document has been finetuned where necessary to adapt it to the Australian context and Australian Montessori schools. This curriculum provides infants and young children with everyday social skills and accomplishments, trains sensory perception and movement systematically, and provides a strong foundation in literacy and numeracy. It also engages older children and secondary school students in all areas of educational knowledge, including language, mathematics, science, history, geography, the study of the creative arts - literature, visual arts, music, drama, dance - and physical education.

In Montessori schools learning in the sciences is oriented to understanding the earth and its place in the universe, as well as respect for the natural environment and the web of life, which in today's terms would be described as education for sustainability. The Montessori approach to the humanities is one that celebrates the diversity of human experience across historical time and geographical space, an approach that emerged from Dr Montessori's proposals for educating children for peace.

The Montessori curriculum is shaped by three key concepts central to Montessori education. These include *the tendencies shared by all humans, the planes of development and the prepared environment*.

Human Tendencies

In the Montessori view all humans share a set of innate tendencies that operate throughout life, guiding both human development and human behaviour. These include the drive shared by all humans to explore and investigate the environment and the need humans have to orient themselves to the environment in an ordered way. Throughout history and in all parts of the world, humans have communicated with each other, and they have measured their world and calculated quantities. Humans need to be active and to work. This work often involves repetition, which leads to exactness, precision and self-perfection. Humans also tend to imagine

things not immediately present to the senses. To feed their imagination, humans build a mental inventory of ordered ideas they have abstracted from their environment. Abstract ideas are the basis of human reasoning and judgement.

Because these tendencies are found in all human beings, regardless of their age, and the place and time in which they live, Dr Montessori called them 'human tendencies'. To optimise learning and development, Montessori educators take these tendencies into account as they design learning environments for each plane of development.

Planes of Development

Dr Montessori outlined four consecutive planes, or stages, of development from birth to maturity, each plane spanning approximately six-years. At each plane of development children and young people display intellectual powers, social orientations and creative potential unique to that stage. Each plane is characterised by the way children in that plane learn, building on the achievements of the plane before and preparing for the one to follow. The timing and nature of the transition between planes vary from individual to individual.

The first plane of development is the period from birth to, approximately, age six. During this stage children are sensory explorers, learning to become functionally independent in their immediate environment and community. Children at this stage construct their own intellect by absorbing every aspect of their environment, language and culture.

The second plane of development is the period from, approximately, six to twelve years. The developmental focus of this period is intellectual independence, hand in hand with the development of ethics and social responsibility. During this stage children become conceptual explorers. They use reasoning, abstract thought and imagination to explore and develop their understanding of the world.

From age twelve to eighteen young people become humanistic explorers seeking to understand their place in society, and to contribute to society. They have a huge capacity for creative expression, and their style of learning becomes more practical and experiential, an approach they use to explore previously introduced concepts in more depth and in real-life contexts.

From eighteen to twenty-four young adults develop specialist knowledge and skills, preparing them to take their place in the world and to establish social and economic independence.

For each plane of development there is a specific Montessori learning environment. Montessori environments for each plane maintain distinctive Montessori characteristics, including freedom

of choice and movement, and an emphasis on independent exploration and self-directed learning. At the same time the design of each environment is customised to the specific needs, interests and potential of each developmental stage.

Within each plane of development there are periods during which children and young people display intense interest in a particular activity or aspect of the environment. These periods were called by Dr Montessori *sensitive periods* for learning, especially in the context of early childhood. The sensitive period for language, for example, is active during the first plane of development from birth to six years. This sensitive period provides a window of opportunity that enables children to learn language with ease and enjoyment. If, for any reason, a child does not learn to speak during this time, the sensitive period disappears and the learning of language requires much greater effort. The particular learning sensitivities and needs of children at each stage of development are reflected in the design of the Montessori environment and in the resources and activities prepared for that stage of development.

The Prepared Environment

Montessori learning environments are prepared to enable infants, children and young people to learn through their own activity. As much freedom and independence as possible is given for their age and stage, in other words a level of freedom matched to their ability to regulate and discipline themselves. They are also provided with resources and activities that capture their interest and initiate cycles of purposeful activity requiring concentration and judgement.

In the Montessori view the development of infants, children and young people is stimulated by action, and interaction, within their environment. What is offered in the environment will, thus, largely determine how children develop intellectually, emotionally and spiritually. Educational research in recent decades, drawing on theories of place developed by cultural geographers, resonates with the significance Montessori educators over the last century have given to the role of the environment in human development (Ellis 2005; Tuan 1977).

The essential components of a Montessori learning environment are:

- the infants, children or young people
- the trained adults
- the physical surroundings, including the specially designed Montessori educational material.

Montessori learning environments are prepared to nurture children's natural tendency to work and their love of learning. They provide opportunities for children to engage in spontaneous, purposeful activities under the guidance of a trained adult. The design of a Montessori learning environment has four dimensions.

The physical environment is characterised by furniture and implements, matched to the size and strength of the children, and by distinctive educational materials designed to precise specifications and matched to developmental stage.

The social environment comprises a multi-age peer group, a trained teacher and trained teaching assistants as required. This dimension of the environment is designed so infants, children and young people can develop both as individuals and as social beings. It includes real-life activities that link them in meaningful ways to their home, community and culture, as well as activities that develop a concept of their place in the world and the wider Universe.

The time environment is designed to give children the time they need to develop. Wherever possible the school day is made up of unbroken three-hour work periods, so children are able to follow their interests and to achieve their learning goals without being interrupted.

The emotional environment is prepared so children always feel safe, secure and confident enough to follow their interests and to engage in deep concentration.

Preparation of the learning environment is a fundamental task of the Montessori teacher. This task is summarised by Mooney (2000: 29) in the following way:

Montessori urged teachers not to interfere with the child's patterns and pace of learning. She thought it was the teacher's job to prepare the environment, provide appropriate materials, and then step back and allow time and space to experiment. Open ended scheduling, with large blocks of time for free work and play, is part of Montessori's legacy.

Developmental Opportunities in the Prepared Environment

A Montessori prepared environment provides a range of developmental opportunities incorporating movement, challenging work, concentration and freedom.

Movement

Montessori environments are prepared to reflect the understanding that movement is necessary for learning. From birth children strive to construct and refine two types of movement:

whole body movement and gross motor equilibrium

refinement of movement of the hand and fine motor hand-eye coordination.

The goal for young children is to bring both types of movement gradually under the control of the mind. Bringing movement under control of the mind is the foundation stone of the independence children and young people continue to develop throughout their formative years.

Work

Montessori educators describe the spontaneous activity of infants, children and young people as work. When their activity is freely chosen and purposeful, children focus their attention on the activity in order to repeat and perfect what they are doing. As they work, they build their powers of concentration and judgement. Work of this type does not result from external direction; instead it arises out of children's interest, often linked to a sensitive period. This type of activity was described by Dr Montessori as 'work' in recognition of the sense of purpose infants, children and young people display during the activity and to lend dignity to the enormous task of creative self-construction that infants, children and young people are undertaking as they work. Montessori learning environments provide motives for purposeful work that engages and supports development.

Concentration

When children concentrate, they are integrating all elements of their personality - movement, attention and judgement. They also build confidence in themselves and their ability to act on the world. In the Montessori view, concentration is a natural state of childhood, and, therefore, attainable by all children. The ability to concentrate learnt in early childhood becomes a valuable attribute that greatly enhances the educational experience of older children and adolescents. Deep concentration, at all ages and stages, is more likely to occur when interest reflecting developmental need guides the choice of activity.

Freedom

From birth children are deeply interested in everything around them. They are driven to explore their world in the service of their own development. If they are to respond to this drive, children need the freedom to explore and discover their environment independently, and to engage their full attention on what interests them with a minimum of interference and interruption.

When infants, children and young people are given freedom in Montessori educational environments, they are free to think for themselves, to make judgements, and to manage the consequences of those judgements. They are free to expand their independence and to take responsibility commensurate with their level of independence.

In Montessori environments infants, children and young people are free to:

- choose activities from among those previously introduced
- work with activities for as long as their interest dictates and until an internal satisfaction is achieved
- choose their place of work and the people they work with
- communicate with others
- work without interruption
- develop their own individual work pattern.

Clear and unambiguous limits to children's freedom are also necessary to ensure their safety and the harmonious functioning of the learning environment, as well as their family and community. Infants, children and young people in Montessori environments are not free to disturb or harm others.

Features of the Prepared Environment

Montessori prepared environments have two key features. They are beautiful and ordered, and they are designed for multi-age groupings.

Beauty and Order

Montessori environments are prepared to be both beautiful and ordered.

The beauty of a Montessori environment arises from a combination of elements. Ideally, the room is light-filled, spacious and without clutter so children can move around the room with ease. The outdoor area is as attractive as the indoor area, and available to the children at all times. The design of the furniture is elegant and simple, and light enough for children to move around and arrange by themselves if they wish. The use of colour, fabric, decoration and music is simple and artistic, reflecting the aesthetic values of the children's cultural backgrounds, rather than the mass-produced culture of childhood promoted by media and commercial interests. In the Montessori view, an artistically beautiful environment inspires and uplifts children and helps them to concentrate.

Order and stability are also vital to children's sense of wellbeing. In early childhood, children depend a great deal on external order in the environment to support the construction of an emerging internal mental order. For this reason, during early childhood, children need an ordered, predictable environment from which they can derive meaning and in which they are able to build knowledge and understanding of the world and their place in it. An ordered environment in early childhood helps children construct a stable, internal order.

Over the age of six, children become very interested in expanding the order they have previously internalised, for example, by:

- classifying the world using knowledge systems derived from the educational disciplines
- understanding time and change
- building a sense of moral order
- learning to think in abstractions.

Adolescents, in turn, are interested in applying their knowledge and understanding in practical ways that reflect occupations in the wider community.

Multi-age Groupings

Montessori environments are prepared for multi-age groupings of children. These groupings operate very like family environments, providing key learning and development opportunities in two ways. First, multi-age groupings encourage children to aspire to the achievements of older peers. New students enter an established and mature environment with effective models of both work and social interaction. Second, multi-age groupings enable older children to learn to treat younger ones with care and respect, providing them with opportunities to reinforce their own learning and understanding through 'peer teaching'. In multi-age groupings children are able to work through the curriculum at their own pace without being limited to one year of the curriculum only.

There are Montessori environments prepared for the following multi-age groupings:

- the Nido (early childhood setting for children from birth to children who are walking independently, approximately 15-18 months)
- the Infant Community (early childhood setting for children who are walking independently i.e. from 15-18 months to 3 years)
- the Children's House (preschool, and/or long day setting for children from 3 to 6 years)
- the primary school (a classroom for children aged from 6 to 9 years and a classroom for children aged 9 to 12 years, or one classroom for children aged from 6 to 12 years)
- the secondary school (a learning environment for students aged from 12 to 15 and a learning environment for students aged from 15 to 18 years)

The advantages of multi-age grouping include the following:

- the opportunity to experience three roles i.e. being the youngest, in the middle and the oldest, and the time to develop appropriate behaviours for all three roles
- experiences that stimulate a sense of caring and responsibility for others and the continuation from year to year of the culture of the class as a caring community
- experience of social cohesion and a sense of place gained from being in the same environment for three years
- exposure to a diversity of talents, aptitudes and interests, and a wide curriculum beyond a single year
- participation in peer teaching
- experience of appropriate behaviour and teaching and learning modelled from a broad age range of their peers
- development of self-esteem and a greater understanding of community responsibility from roles as leaders in the group
- groupings of similar interests and learning needs from across the age groups working together at their own pace

- work in the environment prepared for a broad age range, so students can see the whole progression of the curriculum for their group, progress independently in areas of strength and also revisit areas of knowledge comfortably as required
- experience of stability and social cohesion with the same teacher within a stable community for three years
- new students join a community that is already formed, and the teacher builds a solid relationship with each one.
- individual learning is more effectively supported because there is more opportunity for teachers to know the students well
- close knowledge by the teacher of approximately two thirds of the children in the class at the beginning of each new school year, providing ample opportunity to build strong relationships with the new one third who arrive each year.
- younger children observe materials and procedures used by older children, so they already have some familiarity with the materials, procedures and knowledge before the teacher gives them the lesson directly

Contemporary studies in neuroscience support the value of multi-age groupings in educational settings, as argued by Geake (2009: 184) in the following way:

A school of the future will be structured around multi-age classes within a vertical curriculum structure that has children moving between academic levels for different subjects as needs be. Since brain development is driven by life experiences, rather than chronological age *per se*, individual children's learning needs are best addressed by having them engage in appropriate curriculum for their stage of learning readiness, ...

Elements of the Prepared Environment

The Montessori prepared environment has three main elements:

- the infants, children or young people
- the Montessori teacher (and trained assistant/s as required)
- the Montessori materials.

The Children

The principles and practice of the Montessori approach have emerged from observing the activity of communities of children in prepared environments. At each stage of development the physical, emotional, psychological, social and intellectual needs of the children govern the preparation of the environment, as well as the design of the materials placed in the environment and the activities offered to the children. Each stage of development offers children a unique opportunity for self-construction. In the Montessori view, if children are able to achieve the promise and potential of their present stage of development, their chance of fulfilling their future potential becomes far more assured.

The 'essential condition' for child development is, in the words of Dr Montessori (1973/1948: 24), 'freedom to act in a prepared environment where the child can be intelligently active'. Children's self-chosen activity is the catalyst for learning in a Montessori environment; in other words, learning is a function of children's active choices motivated by interest.

Montessori environments are prepared for *communities* of children. In other words, they are prepared to encourage children to be responsible and caring citizens able to be a part of a community of peers in preparation for becoming active and contributing members of the wider community. The community of children also provides what, in an era of falling birth rate and single child families, might be called 'pseudo siblings'.

Montessori environments adapt easily to meet the needs of children from diverse cultural and socio-economic contexts, as well as children with special needs and gifts. Montessori educators believe that all children in the community benefit from an inclusive approach. The curriculum is child-centred and customised in ways that create an individual learning pathway for each child.

The starting point for learning is always what individual children know and can do. Learning is then broken down into clear, incremental steps, scaffolded by the Montessori materials and exercises. In each content area individual children are given as much opportunity as they need for repetition, consolidation, application and extension. In this way children become confident learners, willing to take on intellectual challenges, to solve problems and to persevere until they have mastered elements of the curriculum.

The Montessori Teacher

The Montessori teacher's role is to connect the children with the Montessori prepared environment. In general terms the teacher's role includes:

- preparing the learning environment
- linking the children to appropriate and challenging activities

- leaving children free to engage in an activity until their interest is satisfied, only assisting where required.
- coordinating the dynamic balance between freedom and discipline
- recording children's progress and achievement

Montessori teachers develop warm and supportive relationships with children, marked by respect for the children's abilities and individual developmental needs. While children in the Montessori environment are not given unfettered freedom, they are free to choose their own work. The teacher respects children's work choices, ensuring individual choice does not become secondary to group activities.

Montessori teachers are trained to observe children's interests and activity carefully. The way Montessori teachers observe children's activity can be compared to the 'fluid rather than static' approach to observation advocated by Fleeer and Surman (2006: 145) for teachers working in early childhood settings. Knowing how to observe constructively and when, and how much, or how little, to intervene, is one of the most important talents the Montessori teacher acquires during a rigorous course of training. Close observation provides the evidence teachers use to make decisions about how to foster children's interests and meet children's learning needs. Observation is also used to monitor children's progress.

On the basis of their observations Montessori teachers introduce developmentally appropriate challenges by showing children how to work with Montessori materials matched to their current needs and interests. For this reason, Montessori teachers must know the scope, sequence and use of the Montessori materials in sufficient detail to be able to select and present lessons effectively at point of need. The repertoire of Montessori activities and exercises across the curriculum for each stage of development is extensive. Montessori teachers draw on this repertoire as they strive to offer just the right lesson or activity to each child at just the right moment.

In the context of literacy education Snow, Burns and Griffin (1998 executive summary, cited in Freebody 2007: 59) point out that 'the identical mix of instructional materials and strategies' do not 'work for each and every child'. Drawing on their research findings, they argue that 'effective teachers are able to craft a special mix of instructional ingredients for every child they work with' chosen from 'a common menu of materials, strategies and environments'. This is the approach used by Montessori teachers in all content areas for children and young people at all stages of development.

Montessori teachers consult regularly with parents throughout each three-year stage. When necessary, Montessori teachers also work closely with other professionals, including, for example, speech pathologists, occupational therapists and specialist curriculum consultants.

Montessori teachers have Montessori qualifications for one, or more, developmental phases (birth to three, three to six, six to twelve) as well as teaching qualifications recognised by state educational authorities. Each Montessori teacher-training course comprises a full academic year, or equivalent, of a study of the Montessori method as well as Montessori professional experience through practicum.

The Montessori Materials

The preparation of each Montessori environment includes the careful preparation of the Montessori developmental materials appropriate to that environment. The Montessori materials are sets of objects, each set designed to exacting specifications. In general the materials are designed to:

- capture interest
- invite interaction and manipulation
- encourage precise use
- extend concentration
- challenge the intellect act as an indirect preparation for future experiences.

Children are shown how to use the materials in concise, but very precise lessons, called presentations. Once children have had a presentation and know how to use a set of materials, they are then free to work with the activities and exercises aligned with those materials as often and for as long as they wish. Many of the materials have an inbuilt control of error, thus enabling children to learn independently with a minimum of adult help. As a result, from an early age, children in Montessori settings build confidence in their own abilities and learn to take responsibility for their own learning.

While many of the presentations used in Montessori environments show children how to use the materials, there are also Montessori presentations that show children how to build skills and knowledge without using materials, for example, lessons in movement, social relations or singing.

There are Montessori materials designed to engage children in all areas of human experience and educational learning, including language and literacy, mathematics, visual and performing arts, music, science, biology, geography and history. The materials embody abstract educational concepts, allowing children to discover these concepts through manipulation, exploration and problem-solving. The result is a deeper understanding and more effective recall of what has been learned. This process is described by Feez (2010: 168), in the context of Montessori early childhood education, in the following way:

Montessori pedagogy is built around sets of objects that 'materialize' educational knowledge in a concrete form children can manipulate with their hands. Children are shown how to use the objects and they are given very exact language to talk about the concepts the objects materialize. After the lesson children are free to work with the objects whenever they choose. Because the objects 'remember' the concepts in a form children can, literally, 'grasp', when children do choose to work with the objects, they are able to do so independently and for extended periods of time. As children grasp and manipulate the objects with their hands, they are learning how to grasp and manipulate the corresponding concepts in their minds.

The Montessori materials are on constant display on open shelves. The materials of each content area are displayed in the sequence they are presented to the children. For this reason, a fully equipped Montessori environment can be said to embody the scope and sequence of the Montessori curriculum for that stage. The children choose from the shelf, at any time, the materials they know how to use. When children are shown how to use the materials, they are also shown how to handle the materials carefully and how to return them to their place once they have finished. Many, though not all, of the materials are designed for individual use, and a common sight in a Montessori early childhood environment is a number of children working with great absorption on individual activities they have chosen themselves, their space and concentration respected by others in their group. As children grow older and make the transition to the primary school, increasingly they work cooperatively on learning activities, research projects, whole-class projects or community projects. Adolescents engage in occupations that reflect the life of the wider society.

Montessori Pedagogy

The principles that underpin Montessori pedagogy have emerged from observing children's activity and monitoring teaching practice in Montessori learning environments in many parts of the world for more than a century. In other words, the theory has emerged from many decades of practice.

In recent decades a growing body of research has begun to articulate the principles behind Montessori pedagogy in terms recognisable to contemporary educators. This literature includes comparisons of Montessori principles with recent insights into child development and with the characteristics of quality teaching, as well as comparisons of Montessori educational outcomes with national and international benchmarks of educational achievement. Montessori principles and educational outcomes stand up well under this scrutiny, and are being shown to have anticipated many educational goals, issues and understandings that are emerging as important in the twenty-first century. (See, for example, Chisnall and Maher 2007; Cossentino 2005, 2006; Cunningham 2000; Feez 2008, 2010; Foschi 2008; Hughes cited in Schmidt 2009: 85-6; Lillard 2005; Lillard and Else-Quest 2006; Martin 1994; Torrence and Chattin-McNicholls 2005) A review of the literature also reveals interest in the Montessori materials by designers of tangible technologies and digital manipulatives. (For example, Leone 2004; O'Malley and Fraser 2004; Zuckerman, Arida and Resnick 2005)

The ideas that underpin the learning outcomes, teaching and learning practices, assessment and evaluation found in Montessori learning environments have been summarised in the following *Eight Principles of Montessori Education*, identified in research published by Lillard (2005: 29):

- Movement and cognition are closely entwined, and movement can enhance thinking and learning.
- Learning and well-being are improved when people have a sense of control over their lives.
- People learn better when they are interested in what they are learning.
- Tying extrinsic rewards to an activity, like money for reading or high grades for tests, negatively impacts motivation to engage in that activity when the reward is withdrawn.
- Collaborative arrangements can be very conducive to learning.
- Learning situated in meaningful contexts is often deeper and richer than learning in abstract contexts.
- Particular forms of adult interaction are associated with more optimal child outcomes.
- Order in the environment is beneficial to children.

Teaching and Learning Practices

Drawing on more than one hundred years of experience and experimentation, Montessori educators identify stages of physical, psychological, intellectual and social development, and prepare learning environments and curriculum content suitable for each stage. This knowledge, combined with the teacher's observations and record-keeping, enable Montessori teachers to design lessons that meet the needs of individual children in the Montessori environment at any moment in time. In this way the Montessori curriculum is matched to the readiness and interest of individual children, rather than expecting children to adapt themselves to the curriculum. The teaching and learning practices that result are distinctive. Here are some key features of Montessori teaching and learning.

- The children learn how to use the Montessori materials by watching the teacher demonstrate their use in an exact and precise way. When the children use the materials in the way that shows they understand how to proceed, they are able, through their own work, to discover the concepts inherent in the materials. In this way the children construct their own knowledge and understanding.
- In both the Infant Community and the Children's House levels, most lessons are given to individuals. After the age of six children who are ready for the same lesson are grouped together and most lessons are presented to small groups. In a multi-age setting this means that younger children have many opportunities to observe lessons presented to older children and the follow-up work done by the older children after the lessons. By the time the younger children are ready for these lessons, they are already familiar with the materials and the activities.
- In all Montessori environments, for all ages and stages, the activities demonstrated or offered by the adult are open-ended. Children are then free to repeat any activity until an inner satisfaction is achieved. Children younger than six usually repeat an activity over and over in the same manner until they reach the level of perfection that produces an inner satisfaction. Children over the age of six usually repeat with plenty of variation and by augmenting the activity. This may result in a 'great work' that gives children of this age a feeling of great accomplishment and satisfaction. Adolescents enjoy participating in socially-valuable projects in which they have the opportunity to work as apprentices alongside experts of all ages from the wider community.
- In the Children's House children tend to work alone as they construct themselves as individuals. When they begin to prefer working in a cooperative manner with other children, it is a sign that they are beginning to take on the characteristics of children ready for the classroom for six to nine year olds. From six to nine years of age children spend a great deal of time working together with others. It is a time when they are learning how to be part of a group and how to work as a team.
- From the age of six children in Montessori classrooms take part in regular individual conferences with the teacher. In these conferences the teacher helps children to develop their ability to evaluate their own work. The last question always asked at the end of an individual conference is: 'Is there a lesson you would like to have that we have not talked

about?’ In this way children are helped to take ownership of their own educational process. Similarly, adolescents are also encouraged to take ownership of their own educational development. The progress adolescents make through the curriculum is assessed by reference to criteria which the students are aware of from the beginning of the programme. Students use these criteria throughout the programme of study to monitor their own progress. The emphasis is on the progress of the individual and not on comparison with the progress of others. The absence of competition means that adolescents view the assessment process as fair.

Assessment and Evaluation

The Montessori curriculum is organised in a developmental sequence from one phase of learning to the next. Individual students, however, are able to work successfully through elements of the curriculum in a sequence unique to themselves. For this reason, comparisons between students may not be meaningful. The validity of norm-referenced assessment and the ranking of students are further reduced in the Montessori context because, in a multi-age classroom, there are comparatively small numbers of children at the same age and stage. Assessment in Montessori classrooms, therefore, is based on each student’s mastery of skills and knowledge at any point in the sequence, rather than on norm-referenced assessment.

Children display their progress and achievement through a variety of modes, including spoken and written language, interaction with others, creative arts such as drama, visual arts, model-making and, importantly, through applying what they have learned in practical ways.

Formative Assessment

Montessori teachers keep careful records to ensure the students are provided with appropriate lessons when they are ready. Daily observation of students and detailed record-keeping help teachers plan the lessons individuals will need next. A Montessori teacher keeps records of:

- lessons given
- the follow up work completed by each student
- student progress and achievement
- difficulties encountered by individual students and how those difficulties were resolved

Montessori teaching and learning practices provide enhanced opportunities for formative assessment. Here are some examples:

- Because teachers have children in their class for three years, they come to know each child in a way that is not possible when children move to a new class with a new teacher every school year. Through close observation over three years Montessori teachers become very aware of their students' learning styles, strengths and areas requiring further development.
- Because most lessons are presented to individuals or small groups, the teacher can easily observe and record levels of understanding and mastery in individuals. Before a lesson draws to a close, all children in the lesson are given the opportunity to show they know how to use the materials. Any student who needs further teaching can review the lesson when it is presented to the next group of students ready for the lesson.
- Because so many of the materials are self-correcting, when children have completed the exercises with the materials successfully, both the teacher and the children know that they have mastered the knowledge, skills and understanding designed into the material. The design of the materials also ensures that children are able to work out for themselves when something is not right. They then know they can ask for another lesson, or repeat the activity until they have mastered it. In this way children come to think of making mistakes as their 'friend', because a mistake is an opportunity for further learning and deeper understanding.
- When children choose their own work, they reveal a great deal about their interests and abilities at any point in time, which teachers are then able to observe and record.
- During regular individual conferences with the teacher students over the age of six become co-assessors of their work with the teacher. By the time they reach the adolescent programme, students monitor their own progress by reference to explicit criteria.

Summative Assessment

Learner achievement in Montessori classrooms is recorded through observation, the compilation of portfolios and detailed records of progress. Progress can also be measured against achievement benchmarks - or standards-based criteria. In these ways each student's progress can be expressed in terms meaningful to the student, as well as to teachers, parents and the wider community.

While formal testing can be used in a Montessori setting, it is used sparingly and with sufficient contextualisation that all children understand the need for the assessment. Children like to display their knowledge and often ask for tests, for example, in spelling words. Their pride in achievement and their sense of striving for higher goals motivate the testing, rather than a need to submit to a curriculum demand.

Montessori education is designed to meet the needs and interests of individual children. One important need is for children to become valued and contributing members of the culture in which they live. To address this need, Montessori teachers compare the demands of the curriculum mandated by the authorities to the traditional Montessori curriculum. Any areas of the mandated curriculum not covered by the Montessori curriculum are incorporated into the teaching and learning in the Montessori environment. This is most effectively achieved when the new items are offered using the presentation style of the traditional Montessori curriculum.

The Montessori Vision

In 1947, as the world was recovering from the destruction and tragedy of World War II, Dr Montessori wrote a letter to world governments describing the role children play in human history and society.

Through the study of children I have scrutinised human nature at its origin both in the East and the West and although it is forty years now since I began my work, childhood still seems to me an inexhaustible source of revelations and—let me say—hope.

Childhood has shown me that all humanity is one. All children talk, no matter what their race or their circumstances or their family, more or less at the same age; they walk, change their teeth, etc. at certain fixed periods of their life. In other aspects also, especially in the psychical field, they are just as similar, just as susceptible.

Children are the constructors of [adults] whom they build, taking from the environment language, religion, customs and the peculiarities not only ... of the nation, but even of a special district in which they develop.

...The child is the forgotten citizen, and yet, if statesmen and educationists once came to realise the terrific force that is in childhood for good or for evil, I feel they would give it priority above everything else. All problems of humanity depend on [humans themselves]; if [humans are] disregarded in [their] construction, the problems will never be solved.

...[Humans] must be cultivated from the beginning of life when the great powers of nature are at work. It is then that one can hope to plan for a better international understanding.

The Montessori curriculum represents a detailed proposal for achieving Dr Montessori's vision, a vision shared by Montessori educators throughout the world. This vision underpins the Montessori National Curriculum prepared for Australian Montessori schools. More specifically, the curriculum has been developed as the Australian Montessori community's contribution not only to the richness and diversity of schooling in Australia but also to the achievement of the Educational Goals for Young Australians (Australian Education Ministers Declaration, 2008) of promoting equity and excellence in Australian schooling, and supporting young Australians to be successful learners, confident and creative individuals and active and informed citizens.

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Montessori Early Years Learning Programme for the First Plane of Development from Birth to Six Years

The Montessori Early Years Learning Programme: Introduction

The First Plane of Development

The first six years of life is a period of profound transformation, from apparently helpless newborn to capable, active and articulate six year old. This period of life lays down the foundation on which is built the future adult's potential.

From *birth to three years* of age the physical development of infants is remarkable, inspiring the attention and care of both family and community. In tandem with their physical development, infants are developing psychologically, socially, intellectually and spiritually. During this time they acquire the culture and language of the community into which they are born. This multi-faceted development is accommodated in the Montessori environments prepared for children of this age. Specifically, Montessori learning environments for this age group are designed to foster independence, psycho-sensory-motor development and language development.

Between the ages of *three to six years* children continue the process of self-construction, consolidating, refining and adding to the skills and knowledge they accumulated before the age of three. From the age of three children become conscious of what they are learning through their own freely chosen activity, especially activity with their hands. Montessori environments prepared for this age group provide children with *motives for activity* through which they refine their perception, movement and language, and become independent in everyday life. The extensive repertoire of meticulously designed Montessori materials and exercises offered to the children represent a learning programme organised as an incremental progression of activities. Within this framework children are free to choose their own work, once they have been shown how to use the materials and how to do the exercises.

Children's learning in Montessori early childhood settings falls within the following definition of play-based learning found in the *Early Years Learning Framework for Australia* (DEEWR 2009: 6):

... learning through which children organise and make sense of their social worlds, as they engage actively with people, objects and representations.

In addition, the advantage of the distinctive features of Montessori early childhood settings are supported by evidence emerging in the research literature. For example, children at age seven show improved language development and cognitive outcomes if they have participated in early childhood settings where activities are child-initiated and selected from a wide variety of available equipment and materials, and where free choice predominates over whole group activities (Montie, Xiang and Schweinhart 2006). Furthermore, the incremental repertoire of Montessori materials and activities addresses some of the concerns raised by researchers in early childhood education in relation to the difficulties teachers can experience in implementing a play-based curriculum (Bennett, Wood and Rogers 1997; Wood and Bennett 2000).

Characteristics of the First Plane of Development

The *first plane of development* spans the period from birth to approximately age six. During this stage children become functionally independent; they learn to control their movement, to communicate and to work with their hands. Children during this period are also sensory explorers. They use their senses to absorb every aspect of the environment, their language and culture, in the process constructing their own intellects.

Development during this plane is shaped by the special capacity children of this age have for learning and absorbing vast amounts of information, a capacity described by Montessori educators as the *absorbent mind*. The way young children learn is unique to this stage of life. During this plane of development, without being conscious they are learning, children 'absorb' impressions from the environment, impressions that construct their mind and intellect and enable them to adapt to their time and place in history.

Throughout this plane of development children experience periods during which they display heightened sensitivity to, or interest in, particular aspects of the environment. These periods, named *sensitive periods* by Montessori educators, represent windows of opportunity during which children's intense interest, and the spontaneous activity this interest generates, enable children to learn the corresponding knowledge and skill with ease and enjoyment. Montessori educators observe children closely for signs of sensitive periods. They use these observations as a guide to help them choose the optimum time for offering children lessons and activities in, for example, social skills, the refinement of movement and sensory perception, language and mathematics.

The first plane of development is a time of enormous *physical development*. By the age of six children have gained a *functional independence*; they can talk and communicate their needs; they can walk, climb, run and jump by themselves, feed and dress themselves and manage their own toileting. They move with balance and coordination, and are refining the precision and dexterity with which they use their hands. Children's hands, Dr Montessori (1982/1949: 23) argued, are the 'instruments' of their intelligence. In other words, as children refine control of their hand, they are also refining the development of their minds. The importance of having activities in the environment that interest children and that involve the use of their hands is described by Dr Montessori in the following way:

The ability of a thing to attract the interest of the child does not depend so much upon the quality of the thing itself as upon the opportunity it affords the child for action ... it is not enough that a thing should be interesting in itself but that it must lend itself to the motor activity of the child if it is to be interesting to him. There must be, for example, small objects that can be moved from their places. It is then that a child begins to move his hand rather than the objects. A child is delighted to make and unmake something, to place and replace things many times over and continue the process for a long time. A very beautiful toy, an attractive picture, a wonderful story, can, without doubt, rouse a child's interest, but if he may simply look at or listen to, or touch an object but dares not move it, his interest will be superficial and pass from object to object. That is why the environment is so arranged that it lends itself to a child's desire to be active (1967/1948: 104).

Aligned with physical development is *social and emotional development*, development that is enhanced by nurturing, secure environments at home and in early childhood settings. Learning how to be social emerges naturally and spontaneously in the multi-age, mini-communities found in Montessori environments. In these communities older children have the opportunity to be sensitive to the needs of others, while younger children feel able to seek help at any time. In addition, lessons in *grace and courtesy* provide opportunities for young children to practice appropriate social behaviour in a fun and instructive way without public reprimand.

Children from birth to the age of six learn through their senses. Using their senses, they gain first impressions and understandings of the world, impressions and understandings that become woven into the fabric of their minds. This principle, first proposed by Aristotle, is traditionally summarised in the following way: 'There is nothing in the mind that is not first in the senses.'

The first six years of life is a time of rapidly expanding *mental development*. In recent times neuroscientists have begun to describe the development of neurological networks in young

children (OECD CERI 2007) and to emphasise the importance of favourable social and physical environments to support this development. Montessori prepared environments provide children with an environment that enhances the construction of the mind and the intellect, for example, by providing concrete materials through which children begin to classify the world around them while learning language for talking about these early classification systems. This work becomes the foundation for learning during the primary school years when ordered systems of abstract knowledge and the imagination become the tools children use for thinking.

Babies are born with a strong urge to *communicate* and to express themselves. By age six children have acquired language, not only spoken language, but also the fundamental skills of writing and reading. At the same time children are using a *mathematical mind* as evidenced by their need for order and sequence and the drive for precision and accuracy. During the first six years of life children construct a foundation for later studies in arithmetic and geometry.

In summary, during the first six years of life young children learn to function independently, to move with control, to communicate and to concentrate. At no other time in children's lives will they be able to develop in so many significant ways so easily and well. By the age of six children have become socially adapted to their time and place in human history and culture.

Montessori Prepared Environments for the Early Years

Beautiful, orderly, child-sized environments and sensory play are part of Montessori's legacy... Montessori thought that early childhood teachers should: provide real tools that work; keep materials and equipment accessible to the children so they can find and put away what they need; and create beauty and order in the classroom (Mooney 2000: 25).

The Nido and Infants Community:

Environments Prepared for Infants and Toddlers under Three

Montessori environments for infants and toddlers are prepared to be as homelike as possible, and to involve small children in a round of daily activities including quiet times and rest periods. The characteristics of these environments include:

- continuity of care
- an ordered physical environment
- consistency of activity and expectation.

In environments with these characteristics infants build a sense of security, a sense of order and a sense of time.

Continuity of care lays the foundation for emotional and social wellbeing. If infants interact with the same people day after day, they feel secure, and they have the opportunity to build lasting relationships and social bonds they can depend on.

An ordered physical environment lays the foundation of an ordered mind. If infants find things in the same place day after day, they learn to recognise those things and where they belong. In such an environment children grow confident in their ability to know and memorise things, in other words, they become confident in their own intellectual capacity.

Similarly, consistency of activity contributes to children's security and intellectual confidence. A daily routine develops in infants an understanding of the passing of time. If, day after day, infants follow the same routines at the same time and the same places, they have further opportunity to discover that they know something when they recognise familiar things and events. If infants take part in the same activities, in the same order day after day, they further consolidate their sense of security, order and time.

There are two prepared environments for infants and toddlers under the age of three years:

- The *Nido*, or *nest*, is a nurturing home-like environment for infants from 2 to 3 months until they are walking independently (around 15/18 months).
- The *Infant Community* is an educational environment prepared for toddlers from the time they are walking independently until they are approximately three years of age. It is a nurturing environment where very young children experience their first structured contact with other children. The focus of the environment is to offer children activity that supports the development of voluntary, controlled movement, spoken language and independence in daily life.

Both these environments are organized and directed by a Montessori trained adult called an *Assistant to Infancy*. *Nidos* and *Infant Communities* can be prepared so children can attend on their own (for example, in sessional or long day care) or so parents can accompany the children. When parents accompany children to the *Nido*, the group is often called a 'parent-infant group'. When parents accompany children to the *Infant Community*, the group is often called a 'parent-toddler group'. The accompanying parents gain information about ways to interact with children based on the modelling of this behaviour provided by the staff. In addition,

in this environment parent and child experience a protected time in which their relationship to each other can deepen and grow.

Activities in Montessori environments for children under the age of three are related to real life. They provide children with opportunities to develop voluntary, controlled movement, independence in daily life and spoken language.

Order is a feature of all Montessori early childhood environments. The ability of the child to create order from the stimuli of the environment is an essential factor in normal development from birth to three years.

In addition, parent information sessions and literature also provide an essential component of Montessori early childhood environments prepared for infants and toddlers.

The Montessori Early Years Learning Programme

Birth to Three Years: *The Nido* and *Infant Community*

The Montessori Early Years Learning Programme from birth to three years focuses on the development of movement, language and independence. Attention is also paid to parent education, family support and community outreach. The *Nido*, the Montessori environment prepared for infants who are not yet walking, focuses especially on the development of movement and language. Structured language activities and activities to promote independence and continued development of movement are a feature of the *Infant Community*, the Montessori environment prepared for toddlers. Development of movement continues to be very important in the *Infant Community*, particularly in the outdoor activities. There is also a focus on continued refinement of hand skills.

Overall the Montessori Early Years Programme aims to provide infants and toddlers with learning environments in which they are valued and contributing members of a mini-community. Within this nurturing community infants and toddlers have the opportunity to develop confidence and a love of learning. In addition, the environment provides many opportunities for children to

learn how to communicate with others in spoken language, and for early explorations of the wider natural, social and cultural world.

Development of Movement

Montessori environments prepared for infants and toddlers emphasise the development and refinement of voluntary movement. Activities are designed to help infants and toddlers bring their movement under the control of the mind, at the same time as they increase their independence in the environment. These activities include exercises for building whole body coordination, control of the hand and hand-eye coordination.

Montessori infant-toddler settings include activities designed to support *psycho-sensory-motor development*. The term *psycho-sensory-motor development* refers to the changes in the infant's brain brought about by sensory-motor experiences. As infants build motor skills, and use their senses to explore the environment, there are corresponding changes in the developing brain. Repetition of movement and the use of the senses help to strengthen neuro-pathways, thus, enhancing the infant's potential in all areas of development.

Content Strand	Knowledge, Skills and Understanding	Material/Activity
	<i>Typically children will:</i>	
Development of equilibrium: in supine position	<p>Move head and eyes to look at an object</p> <p>Transfer objects from hand to hand</p> <p>Bring knees then feet up to mouth</p> <p>Roll onto front using left/right side</p> <p>Cross the midline</p>	<p>Resources include:</p> <ul style="list-style-type: none"> - movement mat - mobiles - interlocking circles - interlocking rings - mirror - grasping mobiles.
Development of equilibrium: in prone position	<p>Lie with arms and legs tucked under body</p> <p>Put weight on elbows</p> <p>Lift head</p> <p>Put weight on one elbow and play with other hand</p> <p>Roll onto back using left/right side</p>	<p>Resources include:</p> <ul style="list-style-type: none"> - movement mat - rattles - mirror - floor space.

	<p>Commando crawl using diagonal cross pattern</p> <p>Get up on all fours</p>	
Control and coordination of body movement	<p>Learn to control and coordinate movement of body:</p> <p>Put self into sitting position</p> <p>Pull to stand</p> <p>Crawl</p> <p>Cruise</p> <p>Stand</p> <p>Walk</p> <p>Sit on a chair</p>	<p>Resources include:</p> <ul style="list-style-type: none"> - punch ball - cylinder with ball - ottoman - bar and mirror - low heavy table - kiosk with bars - push cart - pull cart - stairs - weaning chair - low slatted chair.
	<p>Develop and consolidate skills including:</p> <ul style="list-style-type: none"> - Running - Jumping - Climbing 	<p>Resources include:</p> <ul style="list-style-type: none"> - ramps - climbing frames - ropes - swings

	<ul style="list-style-type: none"> - Swinging from arm to arm (brachiation) 	<ul style="list-style-type: none"> - ladders - beams - balls - wagons - wheelbarrows - brachiation bars - pulley lifters and weighted bags - Implements for sweeping, mopping, raking and gardening.
Development of the hand grasp	Develop control of the hand	<p>Resources include batting and grasping mobiles made of, for example:</p> <ul style="list-style-type: none"> - soft balls - wooden balls - wooden figures - bell or ring on a ribbon.
	Explore and develop the capacities of the hand leading to development of the hand grasp and fine motor control	<p>Resources include:</p> <ul style="list-style-type: none"> - ball and tray or drawer - rings on a spindle - box with bins - cube in box - containers to open and close - peg box

		<ul style="list-style-type: none"> - balls - preparing food - sand play - cutting with scissors.
	Hold and shake rattles successfully	Resources include handmade rattles small enough for a baby's hand to grasp, hold and shake.
Tactile stimulation	Discriminate objects by sense of touch	<p>Resources are tactile objects for manipulation including:</p> <ul style="list-style-type: none"> - interlocking discs - beads on a strap - interlocking rings - wooden articles in a - variety of shapes - objects from the home.
Eye-hand coordination	<p>Develop control of the hand (from batting to a mature pincer grip)</p> <p>Coordinate eye and hand movements</p> <p>Cross the midline while working</p> <p>Use two hands together</p> <p>Transfer objects from hand to hand</p>	<p>Resources are psycho-sensory-motor materials, including:</p> <ul style="list-style-type: none"> - punch ball - box with knitted ball - box with other balls - ring on rocking base - ring on stable base - rings on a peg - rings on a spindle - graded rings

		<ul style="list-style-type: none"> - nuts and bolts - furniture with drawers, locks and keys - peg box - cubes and discs on vertical and horizontal dowels - egg in a cup - cube in a box - beads for stringing - box with different shapes for mailing - slotted box and chips - puzzles - range of fastenings - objects for opening and closing - sewing - materials and implements for - cutting and gluing.
	Develop concept of object permanence	Resources include: <ul style="list-style-type: none"> - box with ball and tray - box with ball and drawer.
	Sort objects	Resources include collections of three dimensional objects for sorting.

Language

Maria Montessori was one of the earliest researchers to observe and describe in some detail the development of language in infants (see, for example, Montessori 1982/1949). She recognised that the foundation for language development is established before birth. After birth, the innate human tendency to communicate with others drives infants to engage with the language used by those around them. Through observation, listening and interaction they learn the language and culture of their community. In the Montessori view this development is related to the development of movement. As infants become able to move about more and more, their field of interest and activity expands, and so does their need for language. The Montessori approach to language for this age group, therefore, starts not with the word but with the child's concrete experiences.

Language development in infants is described by Montessori educators as having the following two phases:

- the prelinguistic phase from birth to twelve months when infants may not use words with meaning but are absorbing and internally constructing the rhythms and patterns of language, and training vocal muscles and auditory perception of the sounds of the language in the environment
- the linguistic phase from twelve months to three years when infants progress from saying their first intentional words with meaning to complex phrases and simple sentences.

Initially, receptive language in infants is more developed than expressive language so they understand a great deal more than they can say. At about two years of age the indirect and direct preparation of the pre-linguistic and early linguistic phases results in an 'explosion' into language. At this time, instead of using single words and words fused together, young children suddenly combine words into grammatical patterns in order to express their meanings. From this point, language use typically expands rapidly.

In Montessori environments prepared for infants and toddlers Montessori early childhood educators strive to create an enriched language environment. Adults in the environment provide infants and toddlers with good models of language use at all times. They listen attentively, respectfully and responsively to all attempts made by the children in the environment to communicate. They also initiate interactions, ensuring language is directed toward the child, particularly during the pre-linguistic phase.

In the language-enriched Montessori environments children have many opportunities to expand their vocabulary and language use in their first language. They also benefit from hearing speakers of other languages if the use of other languages can be integrated meaningfully into the daily routine of the setting. At this age, this works best for children if the adults in the environment each speak only one language to the children. For example, one adult speaks only English and another adult speaks only Chinese when interacting with the children.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will be able to:</i>	
Oral language acquisition and development	<p>Communicate verbally and non-verbally</p> <p>Use spoken language to make meaning, with support if needed</p> <p>Link words and meanings</p> <p>Increase and extend vocabulary</p> <p>Extend language use from words to word groups, phrases and simple sentences</p> <p>Explode into language around 2 years of age</p> <p>Communicate confidently</p>	<p>Language-enrichment activities include:</p> <ul style="list-style-type: none"> - being listened to attentively - varied, real, everyday activities that involve incidental language use - adults speaking directly to children, modelling language use children can understand and imitate - listening to and telling stories - questioning exercise - opportunities to speak and hold conversations with others - naming objects; naming pictures of objects; identical and

		<p>similar matching of objects to cards including naming</p> <ul style="list-style-type: none"> - fishing bags: general, classified and paired objects - songs, rhymes, games, finger plays, stories, poems - access to and being read to from quality children's books. <p>Resources include:</p> <ul style="list-style-type: none"> - an enriched language environment - good models of language use that children can understand and imitate if they wish.
	<p>Begin to use language appropriately in different situations to guide their own and others' behaviour</p>	<p>All activities in the environment offer and encourage vocabulary enrichment and language experience. Specific activities include:</p> <ul style="list-style-type: none"> - seeking assistance - waiting - taking turns - helping another child or an adult - preparing food

		<ul style="list-style-type: none"> - making a contribution to the prepared environment. <p>Resources include good models of language use and social interaction that children can understand and imitate if they wish.</p>
Preparation of the hand for writing	Develop a pincer grip and good hand control	<p>Activities include all <i>practical life</i> and fine motor movement activities including:</p> <ul style="list-style-type: none"> - puzzles - hand/eye coordination activities - food preparation. <p>Resources include functional objects and implements matched to the children's size, strength and dexterity.</p>
	Learn how to hold and use a pencil, paint brush and needle	<p>Activities include:</p> <ul style="list-style-type: none"> - scribbling - gluing - painting - sewing. <p>Resources include functional implements matched to the children's size, strength and dexterity.</p>

Development and Education of the Senses

Infants and toddlers make contact with and explore their environment through their senses. They then strive to organise in an ordered way the myriad impressions they gain through this exploration. Through sensory exploration infants and toddlers develop the ability to discriminate variation in colour, form and shape, dimension, texture, temperature, volume, pitch, weight and taste. This ability is further refined in the *Children's House* and becomes the basis for the future ability to work with abstract concepts.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will be able to:</i>	
Sensorial exploration	Discriminate objects using the senses	Activities include: - <i>practical life</i> - food preparation. Resources include psycho-sensory-motor materials.
	Gain impressions of colour, shape/form, weight, length, dimension, texture, taste, sound	Resources include psycho-sensory-motor materials.
	Develop a sense of aesthetics	The environment and all materials are beautifully designed and arranged with just enough carefully-chosen objects to create just the right amount of stimulus.
	Begin to classify objects	Activities in which children are given the names for general categories of items in their environment Resources include:

		<ul style="list-style-type: none"> - <i>nomenclature</i> objects - <i>nomenclature</i> cards and objects - <i>nomenclature</i> cards.
Visual discrimination	Discriminate objects by sight	<p>Activities include:</p> <ul style="list-style-type: none"> - observing and batting mobiles - observing and grasping varied objects - matching.
Tactile discrimination	<p>Refine the sense of touch</p> <p>Discriminate objects by the sense of touch</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - sorting - fishing bags - food preparation. <p>Resources include:</p> <ul style="list-style-type: none"> - objects for tactile stimulation - objects for tactile discrimination.
Auditory discrimination	<p>Listen to the sounds of objects</p> <p>Identify objects by sound</p>	<p>Resources are objects for auditory discrimination, including:</p> <ul style="list-style-type: none"> - rattles - balls with a rattle inside - shakers.

	Experience timbre, rhythm and beat	Activities involving music and movement, including: <ul style="list-style-type: none"> - singing - using percussion instruments.
Olfactory and gustatory	Experience and identify different foods by smell, taste and sight	Activities include: <ul style="list-style-type: none"> - food preparation - work with <i>nomenclature objects</i>.
Stereognostic sense ¹	Gain knowledge of an object by feeling around it	Activities include: <ul style="list-style-type: none"> - general fishing bag - classified fishing bag - paired objects fishing bag.

Fundamental Life Skills in the Infant Community

Learning fundamental life skills, called *practical life* by Montessori educators, is the component of the Montessori Early Years Learning Programme that links Montessori settings for toddlers with the home. The activities in this area of the environment exploit the desire of toddlers to imitate the adults around them, particularly in self-care, food preparation and care of the environment.

Toddlers love order and strive for independence. Both these impulses find expression in Montessori practical life activities designed for this age group. Through these activities toddlers build and refine motor skills, including whole body equilibrium and coordination, as well as fine motor skills, specifically the transition from palming to pincer grip. *Practical life* activities for children of this age originate in the home and capitalise on very young children's intense interest

¹ The word 'stereognostic' comes from 'stereo' meaning 'around' and 'gnostic' meaning 'to know'. The term refers to sensory perception that combines visual and muscular exploration and memory. When used in Montessori contexts, it refers to the means through which young children gain knowledge by feeling around an object.

in food and their desire to imitate adults. Independence is fostered and movement refined through the use of these activities.

The child will be shown how to do a *practical life* activity and is then free to choose this activity at any time. When toddlers are engaged in self-chosen *practical life* activities, they strive to execute precise movements to achieve a goal, in the process building and refining voluntary control of both movement and attention through repetition and the opportunity to work at their own pace uninterrupted. When toddlers are free to complete cycles of work without interruption, they learn to bring their attention under voluntary control, to exercise the *will* in Montessori terms, and they are able to concentrate for longer and longer periods. They also experience feelings of satisfaction and achievement that contribute to the development of confidence.

Practical life activities, and the equipment and utensils used in the activities, are already familiar to the children as they are the activities and implements that are used in the culture in which the children are living. They are matched to the children's size, strength and level of independence. *Practical life* exercises and activities are modelled by adults in lessons presented to individual children at point of need.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
Transition (from home to Montessori early childhood settings)	<i>During transition typically children will:</i>	
	Become familiar with an environment outside the home	Activity within the setting, which is familiar, home-like and a culturally appropriate environment
	Shake hands and greet another	Activities include: <ul style="list-style-type: none"> - observing good models of adults greeting and shaking hands - opportunities to interact with others, using culturally-appropriate greetings.
	Remove shoes	Resources include: <ul style="list-style-type: none"> - a place for shoe removal and storage

		<ul style="list-style-type: none"> - a low bench to sit on.
	Store bag and clothes	Resources include hooks or a cubby for clothing and bag.
	Pour a drink Choose and prepare food for themselves	Resources include pre-measured portions located within reach.
	Choose an activity Set up a mat or table as a workspace Wait and take turns	Activities are organised within reach on low shelves. Adults model behaviours. Resources include: <ul style="list-style-type: none"> - child-sized tables and chairs - work mats.
	Develop a sense of belonging, being and becoming Imitate the social norms of society	Resources include: <ul style="list-style-type: none"> - a multi-aged group of children within same developmental phase - a supportive adult to observe, model and with whom to interact.
	Develop more precise control of voluntary movement and hand/eye coordination	Activities for learning how to: <ul style="list-style-type: none"> - carry furniture and equipment, e.g. chair, tray, mat, buckets, jugs - pull out and push in a chair - roll and unroll a mat

		<ul style="list-style-type: none"> - prepare drinks and food. <p>Resources include functional objects and implements matched to the children's size, strength and dexterity.</p>
Care of person	<i>Children develop and consolidate independence in:</i>	
	Drinking	Resources are a water source and glass within reach
	Food preparation and eating	<p>Food preparation activities including:</p> <ul style="list-style-type: none"> - cutting - grating - juicing - mixing - shelling - kneading - peeling - modelling by adult and more expert children. <p>Resources include utensils matched to children's size, strength and dexterity.</p>
	Toileting	<p>Resources include:</p> <ul style="list-style-type: none"> - accessible toilet matched to children's size and level of independence

		<ul style="list-style-type: none"> - adult support.
	Dressing and undressing	<p>Activities that include:</p> <ul style="list-style-type: none"> - washing hands - cleaning teeth - blowing nose - brushing hair - cleaning shoes - role-modelling by adults and more expert children. <p>Resources include:</p> <ul style="list-style-type: none"> - storage hooks/cubbies and furniture matched to children's size and strength - grooming area with mirror matched to children's size - <i>dressing frames</i> for learning how to use buttons, zips and Velcro - implements matched to children's size, strength and dexterity.
Care of the environment (indoor and outdoor)	<i>Typically children will be able to:</i>	
	Clean and care for the indoor environment	<p>Activities include:</p> <ul style="list-style-type: none"> - dusting

		<ul style="list-style-type: none"> - cleaning mirrors and windows - polishing wood - washing cloths - washing and drying dishes - sweeping - beating rugs - scrubbing tables - role-modelling by adults and more expert children. <p>Resources include implements matched to children's size, strength and dexterity.</p>
	Clean up spills	Activities include wiping, mopping and sweeping using implements matched to children's size, strength and dexterity.
	<p>Care for plants and garden</p> <p>Observe and appreciate nature</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - dusting and wiping leaves - arranging flowers - planting and watering plants - growing seeds - raking and sweeping.

		Resources include implements matched to children's size, strength and dexterity.
	Care for animals	Activities include: <ul style="list-style-type: none"> - learning appropriate behaviour around animals - feeding animals - caring for animals' habitat.
	Develop a connection with reality and purposeful work	All <i>practical life</i> activities
	Develop a responsibility for the environment	All <i>practical life</i> activities
Social relations	<i>Typically children will:</i>	
	Acquire appropriate language	Resources include: <ul style="list-style-type: none"> - modelling by adults and other children - supportive adults and other children to observe, imitate and with whom to interact.
	Experience interactions with others	The resources are adults and other children in the environment.
	Begin to acquire culturally appropriate customs and manners	Adults model behaviours at point of need.
	Develop awareness of self and others Experience taking turns	Children are respected as individuals and are free to choose and complete their own work.

		<p>The environment is prepared so children have space for their own work.</p> <p>The number of each set of materials is limited, generally only one of each set. In this way children learn to value each activity and to take turns.</p>
	Preparing food for others to share	<p>Food preparation activities include:</p> <ul style="list-style-type: none"> - making bread - cutting up fruit.

Mathematics

One of the human tendencies is to measure the world and to calculate quantities. Infants are born with this tendency, which is called the 'mathematical mind' by Montessori educators. From birth infants observe and respond to measurable physical relationships in their environment in order to be able to orient themselves to the environment and to make sense of it. They assess, measure, hypothesise, order and classify as they explore their environment with their senses and learn to operate in their environment. To crawl or walk from A to B involves assessment and calculation. Up to three years of age this is done unconsciously and by using the senses.

Many of the activities in Montessori settings prepared for infants and toddlers provide sensory experience of mathematical relationships. Some examples are:

- The Montessori materials provide experiences with dimension and form, sequencing, patterns, order and comparison. They also encourage reasoning and calculation.
- The Montessori environment and programme provides experiences in shape and space, time and predictability and enhances working memory.
- Food preparation activities provide experience with measuring, quantity, weight, volume, sequencing and fractions.
- Puzzles, exact matching of nomenclature objects and cards, table setting, and flower arranging provide one-to-one correspondence.
- Language materials provide classification experiences.
- Washing hands, dishes and cloths provides experience with volume, weight and sequencing.
- Sand play provides experience with quantity, volume, weight, measurement and area.
- Songs, poems and finger plays provide experience with number.

- Counting books provide number experience
- Mathematical language pervades the environment – ‘more/less’, ‘right/left’, ‘up/down’, ‘high/low’, ‘in/out’, ‘big/little’, ‘large/small’, ‘heavy/light’, ‘some’, ‘full/empty’, ‘same/different’, ‘near/far’, ‘under/over’, ‘open/close’, ‘here/there’, ‘fast/slow’, ‘today/yesterday’, etc.

These experiences in the *Nido* and *Infant Community* provide indirect preparation for the introduction of more formal concrete mathematical materials in the Montessori preschool setting, the *Children’s House*.

Science, Geography and History

Children from birth are interested in the world around them. They observe the natural world and absorb the culture of the society into which they are born. Children are fascinated by the way the world works, by the life of plants and animals, by the features of the places they find themselves in and by the customs and stories of the people around them.

In later educational contexts these interests are taken up formally in the study of science, geography and history. In the Montessori Early Years Learning Programme they are integrated across the curriculum. Often children pursue their interest in science, geography or history as an extension of the exercises of the senses, because it is through the senses that children first perceive, observe and explore phenomena related to these fields of study.

In the *Nido* and *Infant Communities*, children experience nature informally through sensory experiences inside and outside the classroom. Many experiences happen spontaneously in the garden, for example:

- planting seeds
- watering plants
- cleaning leaves
- raking leaves
- arranging flowers
- observing animals

Creative Arts

Music

Music, in the Montessori view, is like language; it is an aspect of human expression that is integrated into daily life. From birth children delight in and respond to music. Often this delight is expressed through movement. The exercises of practical life build foundation skills in whole body and fine motor control of movement and hand-eye coordination children can use to participate more effectively in musical activities and exercises.

In *Infant Communities* music and movement are integrated in activities that include:

- listening activities in which children move to music
- playing simple percussion instruments
- sense exercises in auditory discrimination
- games involving singing and movement.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Music: <i>auditory discrimination</i>	Listen to the sounds of objects Identify objects by sound Experience timbre, rhythm and beat	Activities include: - singing - identifying different voices. Resources include: - rattles - balls with a rattle inside - percussion instruments - sounds in the environment.

Music: <i>timbre</i>	Listen to and play simple instruments	Resources include a range of percussion instruments.
Music: <i>self expression</i>	Develop the skills to express themselves	<p>Activities involving self-expression in music, movement and drama, including:</p> <ul style="list-style-type: none"> - singing - movement and dancing - playing percussion instruments - movement games - finger plays.

Movement and Dance

The development and refinement of movement is an integral part of the child's development from birth to six years of age. The ability to appreciate dance and to be able to move one's body as a form of expression is an important facet of children's development. The focus on specific movements can assist children's development in many other areas, for example whole body coordination. Dance is also an important aspect of health and physical exercise. Young children have a natural sense of rhythm and often lack inhibition so dance comes naturally and spontaneously to them.

In *Infant Communities* movement is one of the most critical components of the environment. Dance is experienced through movement and music activities.

Visual Arts

Artistic expression was considered by Dr Montessori to be one of the fundamental needs of humans. In particular, she encouraged children to draw. She felt that if children have fine motor control of the hand, learned through the exercises of practical life, combined with trained skills in perception, learned through the exercises of the senses, they would be able to create visual art works of a high quality.

In *Infant Communities* art activities include sewing, cutting, painting, gluing, drawing, working with clay and flower arranging.

Parent Education

Montessori education is *an aid to life* and is not restricted to the prepared environment. An important part of Montessori education is working with parents, families and the community to foster understanding and appreciation of the extraordinary development of young children from birth to three years of age.

Montessori educators provide parents with as much information as possible about child development at this stage, how parents can nurture that development and the way the Montessori approach can support that development. The ways this is achieved include:

- parent information evenings
- open days
- provision of videos, DVDs, books and articles
- discussion groups
- home visits.

Throughout the year there are regular individual meetings offered to parents and prospective parents.

When parents attend with their children in the parent-infant or parent-toddler groups, they can:

- observe the development of the children in the group
- engage with their child in the environment
- seek guidance from and be guided by the Montessori trained adult.

Adults awaiting the birth of a baby and those waiting to adopt may also be invited to attend these environments to observe and gain understanding of infant development. It is part and parcel of the role of the trained Montessori *Assistant to Infancy* to promote understanding of development at all times. For this reason, parent information sessions are not restricted to parents of children attending Montessori centres.

Family Support

Early childhood settings are often the first point of contact for families needing additional support. Montessori early childhood settings aim to be a welcoming community centre, a place of learning, and a safe place for children. The Montessori approach recognises that children come from widely-varied family settings, and that culture, home life and family situation all affect learning and development. Family support may include consultations in the home or at the centre, referrals to other services, support in crisis situations, and informal information and advice.

Community Outreach

The role of Montessori *Assistants to Infancy* includes sharing their knowledge and expertise in the field of early childhood development, with other professionals and the wider community. This may involve formal or informal presentations and talks including the following:

- speaking at public conferences and workshops
- speaking to other early childhood professionals and professional organisations, such as nursing mothers associations, paediatricians, paediatric nurses, speech pathologists, occupational therapists and child psychologists
- building links with non-government organisations who work with children, particularly disadvantaged children
- giving talks to adolescents to prepare them for future parenthood.