



Montessori Curriculum

3 – 6 yrs

The attached document is the
AMI approved curriculum
authorized for use by SAMA members.

DISCLAIMER

Please note that use of this curriculum should not be taken to imply that SAMA 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

The South African Montessori Association gives their sincerest gratitude to Lynne Lawrence as Executive Director of Association Montessori International and the Association Montessori International for their generous sharing of the AMI Montessori Curriculum from 3 to 6 years of age.

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.

At the SAMA 2013 annual general meeting our members asked for a year to peruse and make any necessary changes to the AMI Montessori curriculum in fitting it into our South African context. We thank our members who sent in their contributions. The changes made were to the history and geography content, to make it applicable to South Africa. 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 AMI Approved Curriculum, because it is their work and not ours. In terms of our agreement with AMI, use of this curriculum may not be taken to imply that our schools are AMI accredited. We are proud to belong to the international Montessori family in sharing a global curriculum which represents all children wherever we are.

Jacquelyn Price

President of the South African Montessori Association

SAMA Fundamental Principles

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



Montessori Curriculum

3-6 Years

The document begins with an *Overview* of the history, principles and practice that are the foundation of the Montessori Curriculum and from which all elements of the curriculum are derived.

The subsequent curriculum section covers the Montessori understanding of the intellectual interests, social orientation and creative power of children and young people in the First Plane of Development the content of the curriculum for each plane and the way in which the curriculum is implemented.

- *The Montessori Early Years Learning Programme for the First Plane of Development from Birth to Six years* aligns with the period of early childhood education, namely an introduction to:
 - the characteristics of the plane of development from the Montessori perspective
 - the learning environment prepared by Montessori educators for children and young people during the period of development
 - the learning areas covered by the Montessori curriculum at this plane of development

The curriculum for each learning area is then presented in detail in the form of tables. The tables present the curriculum for each learning area in terms of:

- general content strands
- specific knowledge, skills and understandings students typically develop in each content strand
- details of activities and resources used by Montessori educators to achieve the knowledge, skills and understandings of each content strand

It is important to note that this document is only one element of the comprehensive, integrated approach that is Montessori education. For the curriculum outlined in this document to be implemented in a way that achieves the full potential of the Montessori approach, it must be supported, not only by the preparation of learning environments to meet detailed Montessori specifications, but also expert presentation of the activities and resources detailed in this document. Both the preparation of the Montessori environment for each plane of development, and the presentation of the activities and resources for that plane requires Montessori educators who have undertaken the corresponding specialist training.

Montessori Curriculum: Overview

Introduction

The Montessori Curriculum brings together in one document the educational goals and curriculum content applied in Montessori schools 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.

The Montessori curriculum presented in this document 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 Fler 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.

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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 Children's House: An Environment Prepared for Children Aged from Three to Six Years

The Montessori environment prepared for preschool children from three to six years of age is called the *Children's House*. The *Children's House* is prepared to be homelike, welcoming, aesthetically pleasing and orderly so children come to think of the setting as a 'mini-community' where they learn skills they can apply at home and in the wider community. Cooperation, rather than competition, is encouraged.

The ordered *Children's House* environment provides children with structure and predictability, and helps them orient themselves both to the physical environment of the *Children's House* and to the multi-age 'mini-community' within the environment. There is a strong emphasis on children developing the independence, cooperation and skills for daily living that enable each one to become a valued and independent member of the *Children's House* community. The resources and activities in the *Children's House* are designed to:

- develop coordination of movement
- develop independence
- develop the ability to make informed decisions
- lengthen the amount of time a child can engage in deep concentration
- refine the use of the senses
- encourage exploration
- build social skills
- develop oral communication skills
- develop written communication and the foundations of joyful reading
- develop an understanding of mathematical concepts

The materials in the *Children's House* are displayed on open shelves, always accessible to the children. The children work with these materials during work sessions that are ideally a minimum of three hours in duration with no fixed breaks. In this way children are able to develop and follow their own natural rhythm of activity and rest without unnecessary interruptions.

The prepared environment of the *Children's House* incorporates indoor and outdoor spaces. Both spaces complement each other and are available to the children at all times. The majority of Montessori educational materials are commonly displayed in the indoor environment but their use is not restricted to the indoor environment. *Practical life* activities are part of both the indoor and outdoor environments. Children may also choose to work with materials in the *sensorial*, *mathematics* or *language* areas in the outside environment as long as they are using the materials for the educational purpose for which they have been designed. In addition the outdoor environment includes gardens (both wild and planted), which children care for, and in which they develop a growing awareness of the importance of the natural environment to the well-being of all living things. Activities in the outdoor environment of the *Children's House* develop in children an appreciation of the natural world and an awareness of its importance to the wellbeing of all living things including themselves, as well as a beginning understanding of the important role of human beings in caring for the natural environment.

For this age group lessons are usually given to individual children. Once children have been given a lesson, the activity is added to their repertoire of possible activities and they are free to choose that activity whenever they wish. Small group activities include games used to extend earlier lessons, and language games. Children are invited to join group activities, but are not required to participate. In a mixed age group, older children can

validate their learning by becoming the 'experts' in the room. Peer teaching occurs when the older children share their knowledge and skills, take on the role of the caretakers of the classroom and provide role models for younger children. Younger children find a group of willing people ready to help them when help is required. They are also further inspired and motivated to learn as they see older children working on the next step in the progression of lessons.

Freedom of choice is a central feature of the *Children's House* environment. Children learn that free choice carries with it responsibilities and consequences, understandings that become increasingly important as they move through the later school years towards adult life.

There is a strong emphasis in the *Children's House* on the development of independence, cooperation and the skills for daily life that will enable each individual to become a valued and autonomous member of his or her community. For example, in the *practical life* area of the *Children's House*, children can choose from activities such as preparing snacks for themselves and others, laying and clearing the table, and cleaning up. They learn, under strict adult supervision, to use child-sized tools, including knives and glassware, safely and effectively. In the *sensorial* area children fine-tune perception, discrimination and judgement. In the *language* and *mathematics* areas children are introduced to literacy and numeracy skills. As they work through the language activities, children extend emergent and beginning literacy skills leading to fluency in both writing and reading. Mathematics activities lead children from early counting and matching experiences towards increasing understanding of number patterns, the four operations, number facts and two- and three-dimensional shapes. In general teacher/child ratios are carefully planned in the *Children's House* so there is just enough support for the children, but not too much interference from adults in the children's activity. Children are encouraged to be self-reliant, or to solve problems with their peers with as little adult intervention as possible. In this way children develop self-assurance and self-esteem.

Incorporated into the four areas of the *Children's House* curriculum are materials, activities and exercises that introduce children to *visual arts*, *music*, *physical education*, *science*, *geography* and *history*. Montessori educators sometimes say that the *Children's House* is designed to bring the world to the child. For example, in the *Children's House* children listen to stories and learn songs and dances from their own country and around the world, while participating in related *visual arts* activities. They also work with globes, maps, land and water forms, and collections of pictures of life in different cultures. Cultural studies of this type are interspersed within the four main areas of the *Children's House*, particularly within the *sensorial* and *language* areas.

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 similar matching of objects to cards including naming - 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 - making a contribution to the prepared environment.

		Resources include good models of language use and social interaction that children can understand and imitate if they wish.
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: - <i>nomenclature</i> objects - <i>nomenclature</i> cards and objects - <i>nomenclature</i> cards.
Visual discrimination	Discriminate objects by sight	Activities include: - observing and batting mobiles - observing and grasping varied objects - matching.
Tactile discrimination	Refine the sense of touch Discriminate objects by the sense of touch	Activities include: - sorting - fishing bags - food preparation. Resources include: - objects for tactile stimulation - objects for tactile discrimination.
Auditory discrimination	Listen to the sounds of objects Identify objects by sound	Resources are objects for auditory discrimination, including: - rattles - balls with a rattle inside - shakers.
	Experience timbre, rhythm and beat	Activities involving music and movement, including: - singing

		- using percussion instruments.
Olfactory and gustatory	Experience and identify different foods by smell, taste and sight	Activities include: - food preparation - work with <i>nomenclature objects</i> .
Stereognostic sense¹	Gain knowledge of an object by feeling around it	Activities include: - general fishing bag - classified fishing bag - paired objects fishing bag.

The Montessori Early Years Learning Programme Three to Six Years: *The Children's House*

The scope and sequence of the Montessori *Children's House* curriculum is embodied in the sets of materials displayed on open shelves at the children's level in the *Children's House* and in the sequence in which these materials are typically presented to the children. The resources and activities in the *Children's House* are organised into four main areas:

- the *exercises of practical life*
- the *exercises of the senses*
- language
- mathematics.

Also incorporated into these areas are resources and activities that introduce children to visual arts, music, physical education, science, geography and history.

Fundamental Life Skills in the *Children's House*

Learning fundamental life skills, or *practical life*, is the component of the Montessori Early Years Learning Programme that links the home environment and the *Children's House*. Children love order, and they love to be independent, and this desire finds expression in the *exercises of practical life*. During these exercises children use a variety of materials and activities to support increased control and refinement of:

- whole body equilibrium and coordination
- fine motor skills
- voluntary control of attention and the ability to concentrate
- the ability to sequence the steps of a task in order to achieve a goal
- everyday living skills.

To achieve the goal of a *practical life* exercise, children must use precise movements. As they strive for precision of movement, children develop their *will*, that is, they develop self-control, the ability to self-regulate, voluntary control over movement, as well as voluntary control over attention, the foundation of the ability to concentrate. If they are free to work at their own pace uninterrupted, children gradually extend the period of time they are able to concentrate. When they have completed a cycle of work, without being disturbed, children typically experience feelings of great satisfaction and increased confidence in their own abilities.

Practical life for children aged between three and six years in the *Children's House* encompasses four main areas:

- control of movement
- care of person
- care of environment
- *grace and courtesy*/social relations.

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 the *Children's House* the skills needed to succeed at the exercises in these areas are developed initially in a series of 'transitional' exercises in which children practise 'preliminary movements'. These exercises build on the skills learnt by children in the *Infant Community*.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Transition or preliminary movements	<p>Repeat precise hand movements leading to concentration and self mastery</p> <p>Develop control and coordination of whole body movement</p> <p>Develop hand-eye coordination</p> <p>Make responsible and appropriate choices</p> <p>Wait, share, take turns</p> <p>Prepare for later work in the environment</p> <p>Develop confidence in own ability in both whole body and fine motor movement</p> <p>Develop orientation to the physical space and accepted expectations</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - activities familiar from home that demand hand-eye coordination - water play - art activities such as glue, cutting and painting - language and music activities such as singing and story-telling. <p>Resources include:</p> <ul style="list-style-type: none"> - simple puzzles - sandpit play - building blocks and other construction materials - activities with clay and/or 'play dough' - modelling provided by adults and other children.
	<p>Widen social contacts and interact in a group</p> <p>Verbally or non-verbally express their needs</p>	<p>Children interact with adults and other children in the environment.</p>
Preliminary activities	<p>Develop more precise control and coordination of movement</p> <p>Repeat precise whole body and hand movements leading to concentration and self mastery</p> <p>Prepare for later work in the classroom</p> <p>Develop confidence in own ability to complete simple everyday tasks</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - spooning and pouring - carrying chairs, trays, mats, buckets, jugs etc - folding cloths - opening and closing different types of containers - threading. <p>Resources include prepared sets of functional objects and implements, as well as furniture matched to children's size, strength and dexterity.</p>
Care of person	<i>Typically children will develop and consolidate independence in the following:</i>	
	<p>Preparing food</p> <p>Eating</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - hand washing - preparing and serving food - eating meals with others. <p>Resources include prepared sets of functional objects and implements matched to children's size, strength and dexterity.</p>
	<p>Personal care</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - blowing nose - washing face - brushing and combing hair - toileting - washing hands.

		Resources include prepared sets of functional objects and implements matched to children's size, strength and dexterity.
	Dressing and undressing	<p>Activities include:</p> <ul style="list-style-type: none"> - grooming - caring for clothes - sewing - dressing and undressing - cleaning and polishing shoes. <p>Resources include dressing frames to practise a variety of fastenings, as well as prepared sets of functional objects and implements matched to the children's size, strength and dexterity.</p>

Care of environment: <i>indoor and outdoor</i>	<i>Typically children will:</i>	
	<p>Experience caring for plants and animals</p> <p>Observe nature and gain an appreciation for the natural world</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - arranging flowers - wiping leaves - watering plants - gardening - caring for animals - range of experiences enabling children to connect with the natural environment. <p>Resources include prepared sets of functional objects and implements matched to children's size, strength and dexterity.</p>
	<p>Develop responsibility for self and others</p> <p>Connect with reality</p> <p>Develop a sense of giving back to the community, leading to feelings of self confidence and empathy</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - dusting and polishing - sweeping and mopping - beating rugs - washing and drying dishes, washing cloths - ironing - washing windows - washing and scrubbing, for example, tables, chairs, floor. <p>Resources include prepared sets of functional objects and implements matched to children's size, strength and dexterity.</p>
Movement: <i>analysis and control</i>	<i>Typically children will:</i>	
	<p>Develop control and coordination of movement</p> <p>Develop equilibrium</p> <p>Develop self-control and the ability to self-</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - <i>walking on the line</i> - balancing - walking up and down steps - <i>silence game</i> and exercises.

	regulate (in Montessori terms, develop the will) Experience social cohesion Experience reflection and silence	Resources include: - a large elliptical line drawn on the floor for the initial walking on the line exercises - designed-in elements of the environment to provide opportunities for practise.
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Social relations	<i>Typically children will:</i>	
	Develop a language for effective and positive interaction with others Experience interactions with others Begin learning culturally appropriate customs and manners Develop awareness of self and others	Activities include: - peer teaching and modelling - celebrations - <i>how to</i> lessons e.g. how to introduce, greet, interrupt, request, apologise. Resources include: - adults in the environment - a multi-age group of children - visitors from the community.
	Experience and understand sharing and turn taking	Activities and resources include: - a limited quantity of each material - a multi-age group - modelling by adults and peers.

Development and Education of the Senses

Young children use their senses to explore their environment. Through sensory exploration they receive a myriad of sensory impressions from birth. From about the age of three, the developing human mind, together with the sensitive period of order, naturally strives to discriminate similarities and differences resulting in young children sorting, arranging and classifying the many sensory experiences they have collected so far. The inventory of sensory experience they construct at this age becomes a resource they use both for thinking and creating.

The Montessori materials children use to fine-tune sensory perception and discrimination, the *sensorial* materials, are some of the most distinctive and iconic of all the Montessori materials. The *sensorial* materials are sets of definitive or graded objects designed to precise specifications. Each set isolates one sensory quality only in regular and measurable ways. The qualities isolated by the Montessori *sensorial* materials include: texture, colour, shape, dimension, mass, taste, smell, temperature, pitch and intensity of sound. Children are taught a precise vocabulary to talk about the sensory qualities, and their variations, embodied in the materials. They learn these words in contrasting sets, for example, *red/blue/yellow*; *loud/soft*; *long/short*; *rough/smooth*; *triangle/square/circle*; *cube/sphere*. In addition, children are introduced to the superlative and comparative language for example *longer/shorter*, *longest/shortest*. This vocabulary then becomes a resource children can use to make more precise meanings about their world. Children use the sensorial materials in the *exercises of the senses*.

The *exercises of the senses* provide children with keys to exploring the world, as well as a means to refine perception and to construct a foundation for abstract thinking and creative expression. Initially, the exercises provide children with opportunities to use each sense to distinguish contrasting perceptions. Later, the children use the exercises to discriminate between increasingly fine variations in order to grade the objects in each set.

The Montessori exercises of the senses support and develop skills and dispositions such as exploration, observation, order, questioning and speculation. These exercises prepare for learning in school subject areas, including mathematics, language, science and geography. For example, *exercises of the senses* can be used as a foundation for the following Years K-2 Curriculum Focus described in *Shape of the Australian Curriculum: Science* (Commonwealth of Australia 2009: 7).

Curriculum focus: awareness of self and the local world

Young children have an intrinsic curiosity about their immediate world and a desire to explore and investigate things around them. Asking questions leads to speculation and the testing of ideas. Exploratory, purposeful play is a central feature of their investigations. Observation, using the senses in dynamic ways, is an important skill to be developed in these years. Observation leads into the idea of order that involves describing, comparing and sorting.

The *exercises of the senses* include exercises through which children learn to attend to their perceptions and to discriminate between finer and finer variation using the following senses:

- visual (dimension, colour, shape)
- tactile (texture, mass, temperature, *stereognostic*)
- auditory (pitch, timbre, rhythm, style, intensity of sound)
- olfactory (smell)
- gustatory (taste)

The *exercises of the senses* help children order sensory impressions in a mental inventory, or classification system, accompanied by a precise vocabulary, which they can use as a resource for thinking and creative expression. These exercises complement children's work with puzzles and construction materials. It culminates in the children's ability to apply the skills they gain in sensory discrimination and judgement to phenomena in the wider environment. The use of the *sensorial* materials also develops children's skill with the precise use of the hand in increasingly exact and controlled movement.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Visual discrimination: dimension	<p>Perceive fine variation in dimension</p> <p>Learn to use a vocabulary to talk about variation in dimension, including <i>large/small, thick/thin, long/short</i>, as well as the related comparative and superlative adjectives</p> <p>Prepare indirectly for counting, solid geometry and later mathematical work</p>	<p>Activities include:</p> <ul style="list-style-type: none">- precise and engaging demonstrations offered by the adult- opportunities for children to choose and continue working with the materials without interruption. <p>Resources include:</p> <ul style="list-style-type: none">- <i>cylinder blocks</i>- <i>pink tower</i>- <i>brown stair</i>- <i>red rods</i>.
Visual discrimination: colour	<p>Match and grade colours</p> <p>Learn a vocabulary of colour</p> <p>Develop a sense of aesthetics</p> <p>Prepare indirectly for visual arts</p>	<p>Activities include:</p> <ul style="list-style-type: none">- precise and engaging demonstrations offered by the adult- opportunities for children to choose and continue working with the materials without interruption. <p>Resources include <i>colour boxes</i> 1, 2 and 3.</p>
Visual discrimination: shape (form)	<p>Explore and discover variation in two-dimensional shapes and the relations between them</p> <p>Prepare indirectly for the study of plane geometry</p>	<p>Activities include:</p> <ul style="list-style-type: none">- precise and engaging demonstrations offered by the adult- opportunities for children to choose and continue working with the materials without interruption. <p>Resources include:</p> <ul style="list-style-type: none">- <i>geometry cabinet</i> and cards- <i>geometric solids</i>- <i>botany/leaf cabinet</i> and cards.

Visual discrimination: <i>mixed</i>	Apply knowledge, skills and understandings of dimension, colour and shape, as well as relations between them	Activities include: - precise and engaging demonstrations offered by the adult - opportunities for children to choose and continue working with the materials without interruption - art and design work. Resources include: - <i>knobless cylinders</i> - superimposed figures/graded geometric figures - objects in the environment.
Tactile discrimination: <i>texture</i>	Experience, match and grade variations in texture Prepare indirectly for handwriting	Activities include: - precise and engaging demonstrations offered by the adult - opportunities for children to choose and continue working with the materials without interruption. Resources include: - <i>touch boards</i> - <i>touch tablets</i> - <i>fabric boxes</i> .
Tactile discrimination: <i>mass (baric sense)</i>	Experience, match and grade variation in mass Prepare indirectly for measuring mass	Activities include: - precise and engaging demonstrations offered by the adult - hefting and weighing activities - using scales. Resources include: - the <i>baric tablets</i> - simple scales - objects in the environment.
Tactile discrimination: <i>temperature (thermic sense)</i>	Experience, match and grade variation in temperature Prepare indirectly for measuring temperature	Activities include: - precise and engaging demonstrations offered by the adult - applying knowledge in the environment. Resources include: - <i>thermic bottles</i> - <i>thermic tablets</i> - objects in the environment.
Tactile discrimination: <i>stereognostic²</i>	Use perception of tactile qualities to identify three-dimensional objects Prepare indirectly for the study of solid geometry	Activities include: - precise and engaging demonstrations offered by the adult - sorting activities. Resources include: - <i>geometric solids</i> - <i>stereognostic bags</i> - <i>mystery bags</i> .

² 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.

Auditory discrimination: <i>dynamics/intensity of sound</i>	<p>Explore variation in sound and its qualities</p> <p>Learn to use a vocabulary to talk about variation in sound (<i>loud/soft</i>, as well as the related comparative and superlative adjectives)</p> <p>Prepare indirectly for the study of music, dance and poetry</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - listening games - playing percussion instruments - listening to different instruments - listening to different types of music - listening and moving to poetry - moving to music - singing - dancing. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>sound boxes</i> - <i>Montessori bells</i> (accurately pitched; diatonic C major scale, plus the five sharps/flats that will turn the C major scale into a chromatic scale) - percussion instruments - live and recorded music and poetry.
Auditory discrimination: <i>pitch</i>	<p>Perceive, match and grade variations in pitch</p> <p>Distinguish and label <i>high</i> and <i>low</i></p> <p>Play known tunes</p> <p>Compose own tunes</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - opportunities for children to choose and continue working with the materials without interruption. <p>Resources include:</p> <ul style="list-style-type: none"> - the <i>Montessori bells</i> (accurately pitched; diatonic C major scale, plus the five sharps/flats that will turn the C major scale into a chromatic scale) - card material.
Auditory discrimination: <i>timbre</i>	<p>Experience and identify the timbre of different instruments, voices and non-musical sounds</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - listening games and activities (indoors and outdoors). <p>Resources include:</p> <ul style="list-style-type: none"> - musical instruments e.g. percussion instruments - music and sounds in the environment.
Auditory discrimination: <i>rhythm</i>	<p>Experience, identify and create different rhythms and beats</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - playing instruments, including percussion instruments - listening to different types of music, songs and poetry - dancing - moving to music. <p>Resources include:</p> <ul style="list-style-type: none"> - musical instruments e.g. percussion instruments - music and sounds in the environment.

Auditory discrimination: <i>style</i>	Experience and identify different styles of music	Activities include listening to different songs and types of music from within the children's own culture and to music of different cultures. Resources include live and recorded music.
Olfactory discrimination: <i>smell</i>	Distinguish, identify and name different smells	Activities include: - preparing food - arranging flowers. Resources include: - <i>smelling bottles</i> - a range of items in the indoor and outdoor environment.
Gustatory discrimination: <i>taste</i>	Identify, distinguish between and name the main tastes (<i>sweet, sour, salty, bitter</i>) Experience relations between the senses of smell and taste	Activities include preparing and eating food. Resources include: - <i>tasting bottles</i> - a range of different foods.

Language

Dr Maria Montessori designed an early childhood language programme in which all the elements of spoken and written language are taught in an incremental, yet integrated, way. In the *Children's House* the spoken language children have been developing since birth is further elaborated and refined through a variety of language enrichment activities that include songs, games, poems, stories and sets of classified picture cards. The multi-age grouping of children means younger children have many opportunities to watch and listen to older children reading both story and factual books.

The first, indirect preparation for mastering written language begins with the *exercises of practical life* and the *exercises of the senses*. The *exercises of practical life* develop fine motor skills and the *exercises of the senses* prepare children to distinguish between the different sounds of the language and the different shapes of the letters.

When children first work with the letters of the alphabet, they use *sandpaper letters* as part of activities in which they simultaneously hear the sounds of the letters, and see and trace the shape of the letters. When children know enough letters, they are introduced to a *movable alphabet* made out of wooden or cardboard letters. Children use the letters to compose and write down their own words, phrases, sentences and finally stories. Because children are using their own language to compose with the *movable alphabet*, they may discover that they can read their own writing, especially when the *movable alphabet* work is accompanied by activities that provide children with structured opportunities for decoding practice. They soon transfer their skills to reading books, both to themselves and others. They are later introduced to word study materials and materials for exploring spelling patterns. To increase reading fluency and comprehension, children work with materials that draw their attention to the grammar patterns of the language.

All elements of the Montessori language programme provide children with a platform for building self-confidence and using language creatively across a variety of modes of communication. Children also have the opportunity to enjoy a wide range of good quality and varied literature, as well as factual and reference books.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Spoken language Vocabulary enrichment	<p>Experience both non-verbal and verbal communication</p> <p>Experience a variety of communication modes (spoken and written language, non-verbal communication, visual images, interactive technologies)</p> <p>Expand and extend vocabulary</p> <p>Understand the spoken language of others</p> <p>Learn to listen to and use spoken language effectively (age appropriate) and with increasing confidence in a variety of situations for both social interaction and self-expression</p> <p>Learn to take turns in a spoken exchange</p> <p>Learn to appreciate language diversity in others e.g. through experience with languages other than English</p> <p>Articulate the sounds of language effectively Use the prosodic features of spoken language effectively, e.g. rhythm and intonation</p> <p>Prepare indirectly for working with written language e.g. informal experience with reading, vocabulary and word study and the grammar of the language e.g. tense, singular/plural, collective nouns</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - a variety of real-life experiences to talk about e.g. excursions, visitors to the classroom from the community, animals in the classroom - a variety of opportunities for communication e.g. conversations, retelling real-life events, describing, expressing opinions, explaining - opportunities to enjoy quality literature and to tell and read stories - opportunities to use age-appropriate factual and reference books - singing and playing music - activities involving rhyme and poetry - finger plays - sorting and matching sets of objects and pictures cards - the <i>spoken question game</i>, a spoken presentation scaffolded by an adult. <p>Resources include:</p> <ul style="list-style-type: none"> - adults and other children in the environment - vocabulary enrichment picture cards - sets of classified picture cards.
The mechanics of writing and reading: sound-letter correspondence, letter formation, decoding, handwriting	<p>Learn the correspondence between sounds of the language and the letters of the alphabet</p> <p>Arrange the letters of the alphabet to make words, phrases, sentences and paragraphs</p> <p>Decode written words using knowledge of letter-sound correspondence (single letters, digraphs)</p> <p>Develop pencil grip, adaptation of space, lightness of touch and muscular control of the hand</p> <p>Use a variety of writing implements and surfaces</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - scribbling, painting, cutting and gluing - designing with the metal insets - the sound game - matching labels to objects in the environment, miniature objects or pictures in card sets - modelling by adults, or other children - phonetic reading (objects and labels, labels without objects, cards) - blends/digraphs (moveable alphabet, booklets, charts, labels to match objects) - sight words/puzzle words. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>sandpaper letters, moveable alphabets, metal insets</i>

		<ul style="list-style-type: none"> - a variety of writing surfaces, including sand, chalkboards, different types and colours of paper - a variety of writing implements, including chalk, crayon, pencil, brush.
Written expression: preparation	<p>Gain an appreciation of written language in all its forms e.g. literary, factual, reference</p> <p>Build confidence in ability to engage with written expression</p> <p>Express themselves in writing</p> <p>Become familiar with the patterns of written language in preparation for written composition and reading comprehension</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - reading aloud by adults or other children - writing with the <i>moveable alphabet</i> - vocabulary building across the curriculum <p>Resources include:</p> <ul style="list-style-type: none"> - quality children's literature, factual books and a range of other appropriate written material - <i>sandpaper letters, moveable alphabets.</i>
The functions of words: parts of speech and their work	<p>Experience and gain an understanding of the grammar patterns used to organise words into text</p> <p>Experience and understand that word order affects the meaning of written language</p> <p>Enhance and extend reading skills and reading for meaning</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - <i>functions of words</i> games and exercises. <p>Resources include:</p> <ul style="list-style-type: none"> - a 'mini' environment, e.g. house, farm, zoo, streetscape, and labels - grammar symbols.
Reading: analysis and synthesis Sentence analysis: words, groups and phrases, clauses and sentences	<p>Build knowledge and understanding of the grammatical patterns of language</p> <p>Explore and understand the importance of verbs</p> <p>Explore the structure of a sentence</p> <p>Enhance and extend reading skills and reading for meaning</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - phonetic reading (objects and labels, labels without objects, cards) - blends/digraphs (moveable alphabet, booklets, charts, labels to match objects) - sight words/puzzle words - <i>reading/sentence analysis</i> games and exercises. <p>Resources include:</p> <ul style="list-style-type: none"> - charts and moveable material - prepared sentences in increasing order of complexity - objects in the environment - labels - quality literature and factual books - opportunity to compose sentences independently.
Word study	<p>Extend their knowledge and understanding of English vocabulary</p> <p>Build words using knowledge of, for example, prefixes and suffixes, compound words, singular and plural</p> <p>Build families of words</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - <i>word study</i> games and exercises <p>Resources include:</p> <ul style="list-style-type: none"> - <i>moveable alphabets</i> in two or more colours - words on cards - word lists and charts.

Spelling	<p>Explore and refine spelling</p> <p>Begin making the transition from invented spelling to correct spelling</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult <p>Resources include:</p> <ul style="list-style-type: none"> - moveable alphabet - phonogram cards and booklets - word study - personal word lists - dictionaries - books.
Reading commands Interpretive reading	<p>Read for meaning with increasing fluency</p> <p>Prepare for drama activities including emotional content of literature</p> <p>Experience and understand the effect on meaning of mood and style in literature</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - acting out increasingly complex written commands - acting out extracts from children's literature. <p>Resources include:</p> <ul style="list-style-type: none"> - command cards - extracts from quality children's literature - quality literature and factual books - poetry - <i>Who am I?</i> riddles.
Reading across the subject areas	<p>Practice and consolidate reading skills</p> <p>Use reading skills to gain information and to research topics of interest</p> <p>Extend their vocabulary</p> <p>Discover and use accurate terminology for phenomena in the world around them</p>	<p>Activities include a range of opportunities to enjoy and practise reading and to extend reading skills across all areas of the curriculum.</p> <p>Resources include:</p> <ul style="list-style-type: none"> - visiting experts - objects, labels, picture cards, jumbled definitions and control booklets - quality age appropriate reference books.
Punctuation	<p>Explore the conventions of punctuation, including use of capital letters, full stop and commas</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - <i>punctuation</i> games and exercises. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>moveable alphabet</i> - punctuation cards.
Musical notation	<p>Experience and discover musical notation as a means of recording sounds</p> <p>Use musical notation for composition</p> <p>Read notes in order to play back another person's musical ideas</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - musical notation games and exercises. <p>Resources include:</p> <ul style="list-style-type: none"> - moveable music notation symbols (e.g. treble and bass clefs, notes, rests, dynamics, tempo) and wooden board with painted staff - rhythm charts - card material.

Cultural extensions: <i>language across the subject areas:</i> <i>history</i> <i>geography</i> <i>science</i> <i>art and music appreciation</i>	Respect and recognise differences across families, the community and the world Explore social relations in a range of contexts Experience other cultures Appreciate the natural world Respect all life forms Develop the aesthetic sense	Activities include: - caring for plants e.g. dusting, planting, potting, harvesting - caring for animals - preparing food from around the world. Resources include: - artefacts from a range of cultures, including, for example photographs, art works and wall hangings; songs, poetry and stories; tools and musical instruments; food and clothing - land and water form models, picture cards, labels, definitions and booklets - globes, maps and flags - geography and history folders of classified pictures i.e. sets of picture cards, labels and booklets representing different types of clothing, food, shelter, transportation, defence, animals and plants, in different cultures and countries.
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Mathematics

The study of mathematics is a reflection of the human tendencies for investigation and orientation, for order and classification, for reasoning and making judgements, and for calculating and measuring. In the Montessori *Children's House*, when mathematical concepts are first presented to children, they are embodied in concrete materials.

Mathematics in the *Children's House* builds on and extends the *exercises of practical life* and the *exercises of the senses*, as well as the many mathematical experiences children encounter incidentally in their daily lives, including experiences with:

- visual representation of mathematical concepts
- pattern and order
- problem solving
- cardinal and ordinal numbers
- place value
- operations (addition, subtraction, multiplication, division)
- fractions
- spatial relations e.g. placement of objects, spatial patterns, one-to-one correspondence of objects and two-dimensional shapes
- measurement e.g. length, mass, time, temperature, volume, perimeter, area
- word problems (addition, subtraction, multiplication, division)

As they work with the exercises of the senses, children are making judgements in relation to distance, dimension, graduation, identity, similarity and sequence. Building on this foundation, the Montessori mathematics materials introduce children to:

- counting (from 1 to 10, 10 to 90, linear 1 to 100 and 1000, and skip-counting as an introduction to multiplication)
- place value to four digits
- number operations (addition, subtraction, multiplication, division).

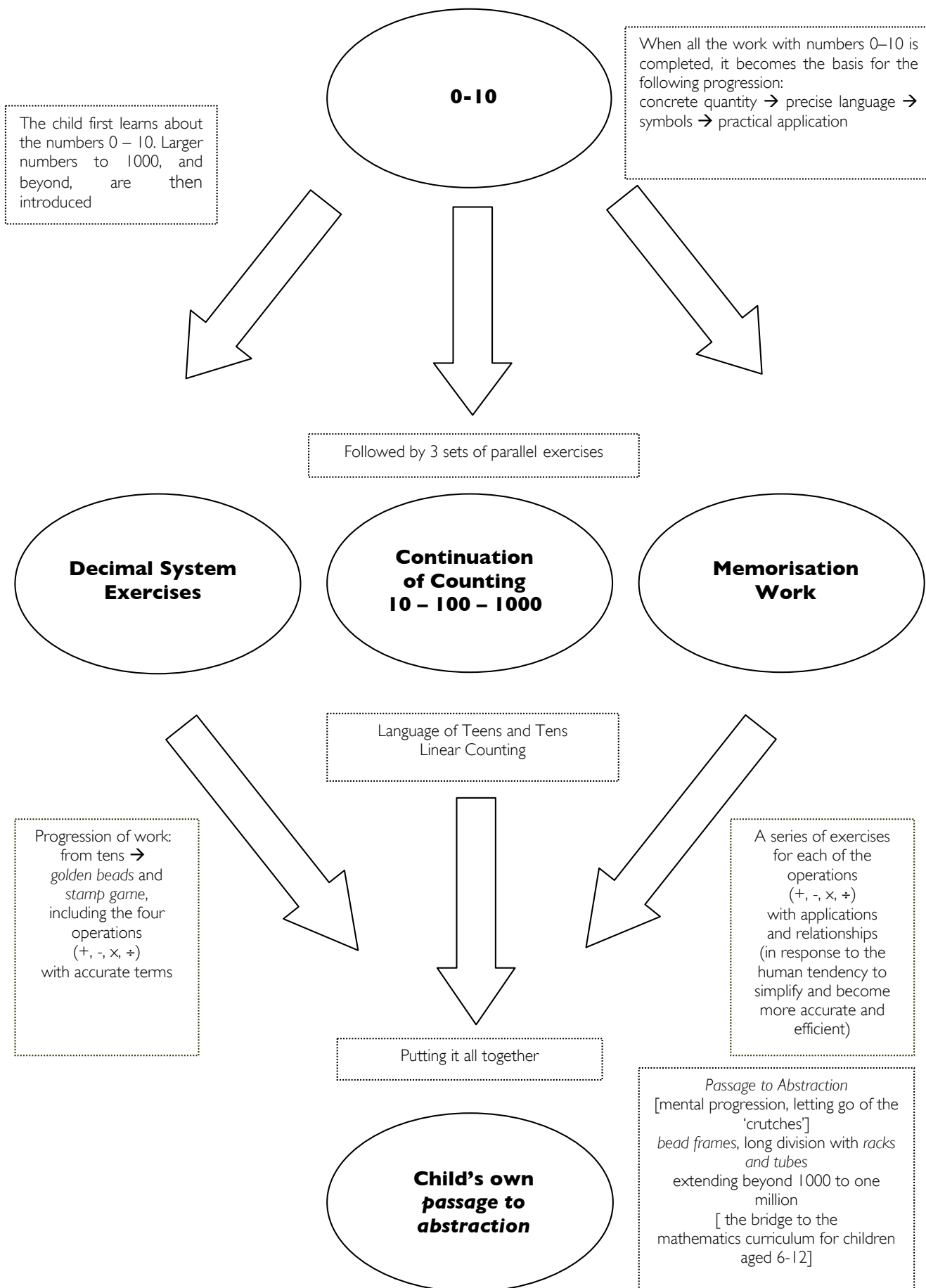
The base ten number system is represented for children in concrete form using *golden beads* organised so they vary simultaneously in quantity, size, mass and geometric shape. Children are also given the corresponding symbol for each quantity. In this way, children experience relations between the hierarchies of the system in

multiple ways. Using this material in active and enjoyable games, children learn to add, subtract, multiply and divide. This material supports the heightened sensitivity for number children tend to experience around the age of four.

The progression of the Montessori mathematics curriculum in the *Children's House* follows a five-step sequence.

1. *Introduction of Concrete Materials:* (The quantity is presented in isolation.)
Concepts are presented in a concrete form children can manipulate. Children are given accurate language to talk about the concrete impressions. Only after they have experienced the concrete material are they given the symbolic mathematical notation.
2. *Introduction of Symbols:* (The visually recognised symbols are offered in isolation.)
When the child is comfortable with the concrete representation and the oral language, mathematical symbols are introduced.
3. *Association of the Concrete with the Symbols:* (Accurate language is the link.)
Only after the child has completed the first two steps are the concrete materials and symbols combined.
4. *Practice*
After being presented with new information children need the opportunity for repetition. Children are offered a way to practise using and remembering this new knowledge and integrating it with what is already known. They have the opportunity to build and consolidate the knowledge through use of the materials, until it becomes automatic.
5. *Self Assessment*
Children are given exercises to affirm or verify their own understanding and knowledge, and to establish whether they are ready for the next exercise.

An overview of the mathematics curriculum is represented in the following diagram.



Children work through the Montessori mathematics exercises and games in a supported and incremental way. There is no pressure for children to move onto a new topic before mastering the one they are working on. Students are free to progress through the mathematics curriculum following their own interests, so not all children complete the activities in the same sequence or in the same timeframe.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Language of mathematics	Understand mathematical terms, for example, <i>long/short, more/less, share</i>	Activities include: <ul style="list-style-type: none"> - everyday tasks - preparing food - gardening - singing and finger plays. Resources are the sets of objects in the environment.
Mathematical concepts: <i>indirect preparation</i>	Know materials have a purpose Understand beginning, middle and end Have established work habits Experience mathematical concepts incidentally, informally and/or indirectly e.g. spatial awareness, one-to-one correspondence, geometry, classification, measurement, set, order, seriation, sequence, matching, grading	Activities include: <ul style="list-style-type: none"> - movement activities for development of gross and fine motor skills - <i>practical life exercises</i> - <i>exercises of the senses</i> - language/communication activities - singing and finger plays - classifying, sorting, matching, sequencing and grading - everyday tasks (one-to-one correspondence of, for example, sock to foot, cutlery and place on table setting) - preparing food, including measuring, sequencing actions - puzzles, construction, <i>stereognostic bags</i>. Resources are the sets of objects in the environment.
Quantities and symbols 1 to 10	Learn to recognise, sequence and count numbers 0 to 10 Experience and understand the function of 'zero' as an empty set and as a place holder Experience 9 as a counting limit	Activities include: <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - <i>numbers to 10</i> games and exercises. Resources include: <ul style="list-style-type: none"> - <i>number rods</i> and cards - <i>sandpaper numbers</i> - <i>spindle box</i> - <i>cards and counters</i> - <i>memory game of numbers</i> - games with zero.
Decimal system	Understand the concept of units, tens, hundreds and thousands Make and read composite numbers.	Activities include forming numbers with beads and number cards. Resources include <i>golden bead</i> material and number cards.

Language of numbers larger than 10	<p>Compose and count 'teen' and 'ten' numbers to 100</p> <p>Use the language of 'teen' numbers and 'tens' to 100</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - games and exercises with teen and ten numbers. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>teen boards</i> and coloured beads - <i>ten boards</i> and coloured beads.
Counting: continuation	<p>Count numbers 1-10, 10-19, 1-100, 100-1000</p> <p>Recognise recurring patterns across hierarchies</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - counting games and exercises. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>teen boards</i> and coloured beads - <i>ten boards</i> and coloured beads - <i>100-chain</i>, <i>1000-chain</i> and skip counting chains (1-9) in the <i>chain cabinet</i>.
Operations	<p>Experience, understand and apply the operations and their relationships (addition, subtraction, multiplication, division)</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - games and exercises with concrete material. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>golden bead</i> material and number cards - <i>dot game</i> - <i>stamp game</i> - word problems.
Expanding the decimal system: beyond 1000	<p>Recognise number patterns recurring across hierarchy 'families': simple, family of thousands, family of millions</p> <p>Experience and work with large numbers to millions, consolidating earlier work with addition subtraction, multiplication and division</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - games and exercises with concrete material. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>wooden hierarchical material</i> - small and large <i>bead frames</i> - <i>racks and tubes</i> materials
Memorisation	<p>Memorise and apply the essential number facts for addition, subtraction, multiplication and division</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - games and exercises with concrete material. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>snake games</i> - addition and subtraction <i>strip boards</i> and <i>finger charts</i> - box of bead bars - multiplication <i>bead board</i> and charts - division <i>bead board</i> and charts.

Geometry	<p>Recognise and explore 2- and 3-dimensional shapes and their relationships</p> <p>Learn and apply accurate terminology</p> <p>Experience, discover and explore the constructive power of triangles</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - games and exercises with concrete material and objects in the environment. <p>Resources include:</p> <ul style="list-style-type: none"> - simple puzzles - <i>folding cloths</i> - shapes in the inside and outside environments - <i>geometry cabinet</i> and cards - <i>botany cabinet</i> and cards - <i>geometry solids</i> and bases - superimposed geometric figures/graded geometric figures - <i>constructive triangle</i> boxes.
Algebra	<p>Prepare indirectly for algebra</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - precise and engaging demonstrations offered by the adult - games and exercises with concrete material. <p>Resources include:</p> <ul style="list-style-type: none"> - <i>binomial cube</i> - <i>trinomial cube</i> - <i>sensorial decanomial</i> - <i>constructive triangle</i> boxes.
Time and sequence	<p>Experience sequence, order and routine</p> <p>Begin to understand the concepts of <i>today, yesterday, tomorrow, past, present, future</i></p> <p>Begin to tell the time using <i>o'clock, half past, quarter to, quarter past</i></p>	<p>Activities include:</p> <ul style="list-style-type: none"> - daily and weekly routines - experiencing order and sequence in the environment - celebrating seasons and festivals. <p>Resources include:</p> <ul style="list-style-type: none"> - clocks and card material - calendars.
Fractions	<p>Experience cutting up and sharing a whole</p> <p>Learn the language of fractions (quantities <1)</p> <p>Begin to use operations (addition, subtraction, multiplication, division) with fractions</p>	<p>Activities include</p> <ul style="list-style-type: none"> - preparing food - sharing. <p>Resources include fraction circle insets and labels.</p>

Cultural Subjects: Science, Geography and History

Children enter the *Children's House* when their interest in observing natural and social phenomena is at its peak. They are in the process of building a framework for classifying the features of the world around them. The *exercises of the senses* develop and refine children's powers of observation and sensory perception. Children learn to appreciate the natural world and social world through their senses.

Activities that provide children with experience of the natural and social world are presented in the same integrated way as all Montessori activities. Knowledge is presented to children in concrete form they can manipulate in purposeful ways. Activities allow for freedom of choice and repetition. Lessons can be given individually, or in small or large groups.

A systematic approach to the study of nature and society in the *Children's House* lays the foundation for *Cosmic Education*, which is the major focus of studies for children aged from six to twelve years.

The curriculum below covers the Montessori Early Years Learning Programme for the *Nido*, *Infant Communities* and the *Children's House*, but most of the activities are designed for the *Children's House* specifically.

Science

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Practical life	Care for plants and animals	<p>Activities include:</p> <ul style="list-style-type: none"> - developing precise hand control - <i>how to</i> lessons e.g. how to clean up - gardening, cleaning, sweeping, raking, watering and cleaning leaves. - providing pets with an appropriate habitat or shelter - feeding pets. <p>Resources include sets of functional objects and implements needed for the care of plants and animals and matched to children's size, strength and dexterity.</p>
Sense exercises	Refine and develop powers of observation and perception	<p>Activities include relevant <i>exercises of the senses</i> i.e. pairing then grading dimension, colour, shape, texture, sound.</p> <p>Resources include the Montessori sensorial materials and the indoor and outdoor environment.</p>
	Recognise very small differences and similarities	
	Begin to classify nature	<p>Activities include:</p> <ul style="list-style-type: none"> - tracing and naming leaf shapes in the <i>botany cabinet</i> - matching leaf cards and booklet with real leaf specimens - art and craft activities. <p>Resources include:</p> <ul style="list-style-type: none"> - the botany cabinet - card material - plants in the environment.

	<p>Distinguish the four fundamental tastes</p> <p>Distinguish scents of, for example, herbs and spices</p>	<p>Activities include relevant <i>exercises of the senses</i>.</p> <p>Resources include:</p> <ul style="list-style-type: none"> - <i>tasting bottles</i> - <i>smelling bottles</i>.
Physical Science: <i>simple physics and chemistry, time, weather, astronomy</i>	<p>Observe and respond to natural phenomena to gain an impression of the scientific properties of such phenomena</p> <p>Explore the many features of the world</p> <p>Investigate their surroundings by observing, questioning, exploring and reporting</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - using a magnifying glass - undertaking simple experiments, e.g. magnets, sink/float, air, sound, gravity, light - collecting rocks - telling the time - monitoring the daily weather - observing and learning about clouds - learning about the sun, moon, stars and constellations - cooking - mixing colours - reading age appropriate books about the physical sciences. <p>Resources include sets of functional objects and implements matched to children's size, strength and dexterity.</p>
Botany	<p>Refine and develop powers of observation and perception</p> <p>Explore and observe the world of plants</p> <p>Develop an appreciation of the wonders of the plant world</p> <p>Begin to understand what plants need to survive, grow and thrive</p> <p>Learn to care for plants</p> <p>Understand the effect of seasonal changes on plants</p> <p>Become aware of the interdependency of all living things and the function of each in the web of life</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - planting and watering - raking and hoeing - weeding, composting, harvesting, re-potting - working with leaves e.g. cleaning, matching to <i>botany cabinet</i> shapes, collecting for study; drawing, making leaf collages and prints - experiments including the needs of plants, what seeds need to germinate and grow - nature walks. <p>Resources include:</p> <ul style="list-style-type: none"> - sets of functional gardening implements matched to children's size, strength and dexterity. - selection of age appropriate books about plants and animals - gardens with planted and wild areas, flowering and non flowering plants, with garden beds, raised areas and planter boxes - indoor plants (non-toxic) representing a variety of species e.g. one for each leaf shape in the <i>botany cabinet</i>.

Botany: language	<p>Build a vocabulary for talking about plants</p> <p>Write and read about plants (4-6 years)</p>	<p><i>Spoken language:</i></p> <ul style="list-style-type: none"> - names of plants, leaf shapes, parts of a plant, parts of roots, parts of a flower, parts of a leaf - names of gardening activities and tools - stories and poetry about nature - pictures about plants as motives for spontaneous conversations <p><i>Written language:</i></p> <ul style="list-style-type: none"> - labels for <i>botany cabinet</i> leaf shapes; indoor and outdoor plants; wall charts and pictures - picture cards, labels, definitions and control booklets e.g. parts of plants, roots, flowers and leaves, and types of flowers, plants and fruit
Zoology	<p>Refine and develop powers of observation and perception</p> <p>Explore and observe the world of animals</p> <p>Develop an appreciation of the wonders of the animal world</p> <p>Begin to understand what animals need to survive, grow and thrive</p> <p>Learn to care for animals</p> <p>Understand the effect of seasonal changes on animals</p> <p>Become aware of the interdependency of all living things and the function of each in the web of life</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - caring for animals (feeding, watering, cleaning) - preparing habitats - studying and sorting different types of shells - observing life cycles e.g. butterfly, frog - learning external parts of the human body. <p>Resources may include animals in the environment, both pets (e.g. guinea pigs; rabbits, bird, fish) and short term visitors (e.g. lizards, snails, ladybirds).</p>

Zoology: language	<p>Build a vocabulary for talking about animals</p> <p>Write and read about animals (4-6 years)</p>	<p><i>Spoken language:</i></p> <ul style="list-style-type: none"> - names of animals, types of animals, animal characteristics, parts of animals - picture cards sets of animals: types, parts of, phases of life cycle - pictures about animals as motives for spontaneous conversations <p><i>Written language:</i></p> <ul style="list-style-type: none"> - classified picture card sets, labels, definitions and control booklets e.g. vertebrates/invertebrates, prehistoric animals, herbivorous/carnivorous animals; marine, desert, forest, jungle, mountain animals; types of animals both invertebrate (e.g. arachnids, crustaceans, insects) and vertebrate (fish, amphibians, reptiles, birds, mammals) - labels for phases parts of the life cycle of animals - labels for the external parts and features of animal bodies and the human body - reading and writing descriptions, stories and poetry about animals - word study activities e.g. male/female, animal young, animal homes, animal groups collective nouns
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Geography

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Geography	<p>Develop a logical framework to order and store their impressions of the world</p> <p>Gain an initial awareness of the importance of ecology</p> <p>Gain initial understandings of features of land, sea and air</p> <p>Gain initial impressions of how plants and animals are distributed across the earth</p> <p>Begin to appreciate what people across the world have in common, as well as the variation among peoples/cultures</p> <p>Begin to appreciate the industry, inventions and creativity of humans all over the world</p> <p>Become aware of their place in the cosmos</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - working with Montessori globes and <i>puzzle maps</i> - drawing and labelling maps and flags - listening to and playing music and singing songs from around the world - making land and water forms in sand/clay - drawing or tracing land and water forms. <p>Resources include:</p> <ul style="list-style-type: none"> - sandpaper globe of the world (land and water distribution) - painted globe of the world (continents and oceans) - pairs of land and water forms: island/lake, peninsular/gulf, isthmus/strait, bay/cape, archipelago/group of lakes - political <i>puzzle maps</i> of the continents of the world - political map of the states and territories of the children's own country - classified pictures of people, places, plants and animals, products from different countries in each continent - flags of the countries of each continent - picture material of flora and fauna emblems of countries/states - picture material of biomes i.e. life zones with own climate and features such as seasons, plants and animals: forest, savannah, grasslands, desert, ice cap, mountains, wetlands - manufactured and craft items from around the world - clay models depicting land and water forms.

<p>Geography: language</p>	<p>Build a vocabulary for talking about places and people across the world</p> <p>Write and read about places and people across the world (4-6 years)</p>	<p><i>Spoken language</i></p> <ul style="list-style-type: none"> - greetings and counting from around the world - names of the continents - names of countries within a continent - names of states and territories in children's own country - names of land and water forms - classified pictures of generic land and water forms - classified pictures of real land and water forms <p><i>Written language</i></p> <ul style="list-style-type: none"> - writing names of land and water forms, continents, oceans, countries, states etc with moveable alphabet - labels, control of error cards, definition booklets for land and water forms - labels, control of error cards, definition booklets for continents and oceans - labels for hemispheres - labels for countries in a continent, and states and territories of children's own country - identifying and labelling land and water forms on outline maps of the world (isolation maps) - picture cards and descriptions of people's lives in tropic, desert and Arctic regions of the world - collections of classified pictures and labels for each continent based on the needs of humans (material and spiritual) - booklets for different continents written, illustrated and published by the children
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History

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
History	<p>Gain an impression of time passing</p> <p>Gain an initial impression of ages past</p> <p>Recognise and appreciate the contributions of individuals, past and present</p>	<p>Activities include:</p> <ul style="list-style-type: none">- telling the time using both analogue and digital clocks- labelling the parts of clocks- sorting, matching and labelling card material. <p>Resources include (according to interest):</p> <ul style="list-style-type: none">- collections of items from a past time e.g. the time when grandparents were children- classified card sets of historical objects and events- collections of pictures for each continent showing people, places and events past and present- classified cards of, for example, famous people past and present- timeline and picture material for learning about the history of transport, lighting, clothing, housing etc.

Creative Arts

The Montessori Early Years Programme covers the following areas of the creative arts curriculum:

- music
- visual arts
- movement and dance

Music

In Montessori early childhood settings music is integrated into the environment and the curriculum. It is not treated as something separate taught only by music experts. It is a form of human expression open to everyone.

In the *Children's House* children are introduced to four parallel series of music activities and exercises in each of the following areas:

- singing
- music appreciation
- music literacy (pitch and notation) with the Montessori bells
- rhythm (notation)
- playing of instruments

The music materials in Montessori early childhood settings have the following features:

- They are always available for the children to use when they choose (except for the percussion instruments).
- They are prepared so children can use them independently.
- They allow for repetition.
- They are designed to lead to concentration, perseverance, success and confidence.
- They are an integral and constant part of the environment.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Music: <i>auditory discrimination</i>	<p>Explore differences in sound and sound qualities</p> <p>Learn language to talk about sound e.g. <i>soft/loud, high/low</i> and the comparatives and superlatives</p> <p>Apply knowledge and understanding about sound to the outside world.</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - <i>sound games</i> e.g. indicating the direction of sound, describing sounds - <i>silence game</i>. <p>Resources include:</p> <ul style="list-style-type: none"> - sounds in the environment - <i>sound boxes</i>.
Music: <i>singing</i>	<p>Sing to a range of music</p> <p>Sing varying the volume and pitch (<i>loud/soft; high/low</i>)</p> <p>Enjoy singing simple songs and melodies</p> <p>Sing the scale</p> <p>Express oneself through singing</p> <p>Develop pitch recognition</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - singing without accompaniment - singing with accompaniment including the <i>Montessori bells</i>. <p>Resources include:</p> <ul style="list-style-type: none"> - simple songs - folk songs.
Music: <i>appreciation</i>	Learn to appreciate a variety of music in the world	<p>Activities include:</p> <ul style="list-style-type: none"> - independent listening to recordings of selected pieces of music - learning about the instruments of the orchestra - listening to different instruments - visiting musicians - using musical vocabulary and listening to/reading age appropriate stories and/or reference material about music and musicians. <p>Resources include:</p> <ul style="list-style-type: none"> - live performances - recordings of many kinds of music from around the world labelled with name of piece, composer and type of music.
Music: <i>timbre</i>	Listen to and play simple instruments	<p>Activities include listening to and playing instruments.</p> <p>Resources include percussion and other simple instruments.</p>

Music: <i>pitch and notation</i>	Identify pitch Hear, match and grade pitch Distinguish high/low Play known tunes Create own tunes Use symbol systems to represent musical sounds	Activities include: - sensorial matching and grading activities with the bells - playing and singing simple songs - composing using the bells - writing and reading music. Resources include: - the <i>Montessori bells</i> (two sets of matching bells accurately pitched diatonic and C Major scale plus the five sharps/flats that will turn the C major scale into a chromatic scale) - moveable wooden notes, G clef, F clef - wooden notation/staff boards - staff paper - musical nomenclature cards.
Music: <i>rhythm</i>	Experience and recognise a variety of rhythm patterns	Activities include: - walking, running, marching and skipping on the line to music - foot tapping, clapping, swaying during songs - creating rhythms with hands and rhythm instruments. Resources include: - Montessori bells or piano or recordings of appropriate music for movement on the line - rhythm cards and charts - a large line on the floor that has long straight lines with gentle curves at the corners for rhythmical movement on the line.

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.

Dr Montessori (1965/1918: 286) observed that during periods of creative drawing and design work children concentrate 'deeply and wholly' with their 'entire intellect at work'. She describes the process in the following way:

To confer the gift of drawing, we must create an eye that sees, a hand that obeys, a soul that feels; and in this task the whole of life must cooperate (Montessori 1965/1918: 289).

Art appreciation is also an important aspect of Montessori early childhood settings. By looking at the artworks of others, children learn that it is possible to create different and unique works while using knowledge, skill and techniques developed by others.

Art is integrated into the Montessori approach in ways that include the following:

- the exercises of practical life and the senses are extended into a range of self expression activities, including work with clay, collage, chalk, paint, charcoal, crayon, oil pastel, cutting, soft wire, weaving and printing
- written language work, including creative writing and poetry, is illustrated by the children.

In the *Children's House* art activities include drawing, painting, design work, collage, printing, flower arranging, sewing and handiwork, modelling with clay, colour mixing, art appreciation cards, wall pictures, and stories. Techniques and processes for using different media are shown to the children in discrete activities presented individually or in small groups. All the materials for each activity are kept together, and children are free to choose the activity, and explore the media, and processes involved, independently. There should, however, be a limited amount of art available at any given time. Two, or at the most, three different kinds of media at a time are sufficient.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Visual Arts	<p>Experience a variety of art media</p> <p>Express themselves through a variety visual art media</p> <p>Begin to appreciate artistic expression from around the world</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - extending skills gained in exercises of <i>practical life</i> e.g. how to hold a paint brush, how to clean up, how to hang up painting to dry, how to hold a pencil - extending understanding of colour and shape gained in <i>exercises of the senses</i> e.g. <i>colour boxes</i>, <i>geometry cabinet</i>, <i>botany cabinet</i>, <i>colour boxes</i> - extending design work with <i>metal insets</i> - illustrating and decorating class work - arranging flowers - drawing in a variety of media e.g. pencil, crayon - painting in a variety of media e.g. water colour, acrylic - making collage - printing in a variety of media - sewing and handiwork - modelling in a variety of media e.g. clay, papier maché. <p>Resources include:</p> <ul style="list-style-type: none"> - art appreciation cards - wall pictures - stories about art and artists - art supplies.

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 the *Children's House* there are many *walking on the line* activities that involve control and coordination of movement. The *silence game* involves practice in inhibition of movement and stillness of the body. Additional movement on the line activities call for increasing control when marching, running and skipping/galloping along with recognition of the rhythmical notation that calls for these kinds of movements.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Movement and Dance	<p>Develop further control of whole body movement</p> <p>Use movement to express oneself</p> <p>Move to music to express oneself</p> <p>Enjoy dancing to a variety of music</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - movement games for whole body control e.g. moving and stopping to a bell, moving without touching anything, following a leader - movement games for equilibrium e.g. <i>walking on the line</i>, walking, running, marching, skipping, walking with objects such as flags - games for inhibiting movement e.g. <i>silence game</i> - movement for expression e.g. free expression to music both on and off the line; marching variations; arm movements while walking on the line; moving to poetry and songs; rhythmic games - dramatic interpretations of, for example, a seed growing - freeze game - free dancing to a variety of music - basic dance steps such as skipping, stepping, swaying and tapping - folk dances, ethnic cultural dances, bush dances, circle dances. <p>Resources include an environment designed to encourage a range of movement.</p>

Personal Development, Health and Physical Education (PDHPE)

The Montessori curriculum provides opportunities for students to gain an understanding of their personal development and health while providing opportunities for physical education and fitness.

Dr Montessori was a physician keenly interested in the health of the human body. She incorporated physical activity into her approach to education, devising gymnastic equipment, open-air games and outdoor adventure education for older children. The development of coordinated movement from birth is central to the Montessori approach. Dr Montessori also observed how children's ability to self-regulate, a phenomenon she termed the *will*, develops gradually from infancy through the childhood years if children are supported to become physically and socially independent. The *will* is developed during early childhood, in the Montessori view, when children can choose purposeful activities they find interesting and which involve manipulation, and then are given the freedom to work with those activities for as long they wish. Through such activity, in which the mind and the hand come under voluntary control, children learn how to make appropriate choices, how to accept the consequences of their actions and how to preserve, and how to work towards achievable goals and expectations.

The Montessori PDHPE programme, as in all other areas of the Montessori curriculum, allows children the freedom to choose their own activity and to complete that activity in their own time. The Montessori PDHPE programme includes:

- personal development, incorporating the *lessons of grace and courtesy*
- health awareness
- physical education.

Personal Development, Incorporating the Lessons of Grace and Courtesy

Personal development in Montessori early childhood settings revolves around *the lessons of grace and courtesy*, the Montessori lessons designed to ensure the needs of everyone in the setting are respected and to promote social harmony. These lessons are given to individual children, small groups or to the whole group. The lessons can be given:

- at point of need
- to prepare children for social situations they will experience in the future
- in response to children demonstrating they need more knowledge about how to manage a social situation, but at a later time so not to embarrass the children or make them feel self-conscious

Sometimes *grace and courtesy* lessons take the form of mini-dramas that highlight behaviour and model more effective ways of managing social encounters and interactions. Many *grace and courtesy* lessons are *how to* lessons that model for children how to, for example:

- put a chair under a table without disturbing others
- interrupt politely
- introduce one person to another.

The lessons include information about:

- how to move and use objects with care and control without causing disturbance or harm
- how to gesture appropriately, for example, indicate, smile or shake hands
- what language to use in each situation, for example, politeness terms such as *please*, *thank you* and *excuse me*.

Because there is only one of each set of materials in the environment, children in Montessori settings learn to take turns and consider others. In addition they learn to respect the time and space others need to complete their work undisturbed.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Personal Development	Acquire and use appropriate social customs and manners Accept responsibility for actions and the consequences that follow Use communication and cooperation skills to share feelings and meet basic needs when interacting with others Identify ways in which to communicate, cooperate and care for others Develop respect for self and for others	Activities include <i>grace and courtesy</i> lessons that model and provide practice in appropriate behaviour and manners. Resources include a multi-age setting, in which older children model more mature interactions to younger children and older children assist younger children.

Health Awareness

Montessori environments recognise the importance of psychological security and wellbeing, encouraging children to become independent, curious, courageous and considered risk takers. Dr Montessori was an early advocate for improving children's health. She emphasised the importance of fresh air, exercise, hygiene and good nutrition for children at a time when these concerns were not yet commonplace. This tradition is maintained in Montessori early childhood settings to this day.

Montessori settings are kept meticulously clean. In the *practical life* area of the curriculum children learn to care for themselves and their surroundings. These lessons begin in the *Infant Community* and continue into the *Children's House*. For example, children learn how to:

- wash their hands, blow their nose, use the toilet, care for their clothes, put on a hat, dress themselves appropriately for the weather, prepare food, eat and clean up after themselves
- keep their surroundings clean, put dirty cloths and clothing into the laundry and ensure equipment, surfaces and work areas are tidy, clean and ready for the next person.

Children are encouraged to plant and care for healthy foods in the school garden and to harvest, prepare and/or cook them, and then serve them to other children and/or family and friends.

Children are engaged in conversations and lessons relating to topics such as nutrition and safety, including sun and road safety.

Children are encouraged to participate in regular physical activity, both indoors and outdoors.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Health	<p>Recognise that healthy living is important for growth and development</p> <p>Become aware of the factors that influence healthy living and well-being</p> <p>Recognise that their safety depends on the environment and the behaviour of themselves and others</p> <p>Develop an appreciation for a healthy and safe lifestyle</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - regular modelling, discussions and activities related to nutrition, grooming and general hygiene - regular modelling, discussions and activities related to safety e.g. road, sun, water, fire, home, school - protective behaviours programme - small group and individual lessons showing children how to care for hair, clean nails, blow nose, cough hygienically - growing vegetables and fruit to prepare and/or cook. <p>Resources include:</p> <ul style="list-style-type: none"> - adults and older children in the environment modelling and talking about healthy and safe choices - elements of the environment designed to encourage healthy and safe choices.

Physical Education

Regular physical activity is an essential component of Montessori early childhood settings. Young children move constantly and need movement in order to learn. Montessori settings are prepared to allow children freedom of movement while, at the same time, activities are designed to enable children to develop control of their physical movement. Daily free play outdoors extends opportunities for regular physical activity.

Children also need activities that are challenging and require 'maximum effort', and these are provided in the setting, for example, opportunities to move heavy objects in safe ways. These activities are extended in the *Children's House* to help children develop, strengthen and refine their movement further.

Content Strand	Knowledge, Skills and Understandings	Activities and Resources
	<i>Typically children will:</i>	
Physical Education	<p>Develop gross motor coordination and skills, flexibility and muscle coordination</p> <p>Participate in physical activity, recognising that it can be both enjoyable and important for health.</p> <p>Understand the relationship between regular physical activity and health</p> <p>Improve physical fitness</p>	<p>Activities include:</p> <ul style="list-style-type: none"> - body control games such as moving and stopping to a bell, moving without touching anything, following a leader (i.e. learning to control movement) - <i>walking on the line</i> movements e.g. walking, running, marching, skipping; walking with objects such as flags (i.e. learning to move with equilibrium) - <i>silence game</i> (i.e. learning to inhibit movement) - free movement within the classroom - practical life activities including cleaning, tidying, gardening, cooking - movement needed to act out reading commands, as well as interpretive reading and functions of words - small group activities to introduce ball skills and games - vigorous games involving a range of movements e.g. running, skipping, galloping. <p>Resources include:</p> <ul style="list-style-type: none"> - outdoor play area, including a variety of surfaces (e.g. hard, sand, grass), shade, fixed equipment (e.g. climbing equipment, sandpit) - sports equipment e.g. balls, bats, hoops, ropes.

Languages Other Than English (LOTE)

In the Montessori view, from birth to the age of six, children are in a sensitive period for language development. For this reason, in Montessori early childhood settings, a great deal of emphasis is placed on supporting and enhancing children's language development. Supporting language development in early childhood settings includes:

- valuing the language/s spoken in each child's home, and the language development achieved by each child when they enter the early childhood setting
- structured support with the development of spoken English, both for children who speak English as a first language and for children for whom English is not the language of the home
- systematic preparation for the development of written English (writing and reading)
- engagement with a language other than English.

Because Montessori educators recognise the special sensitivity to language of children from birth to the age of six, in many Montessori early childhood settings, where possible, children are exposed to a language other than English in order to capitalise on their capacity to absorb whatever language exists in their environment. Montessori educators recognise that young children associate any language spoken in their environment with particular speakers. For this reason, in Montessori early childhood settings where a language other than English has been introduced, the designated adult speaker, ideally a native speaker, speaks only that language to the children without mixing it with English. Young children learn very quickly which language to use whenever they interact with that speaker. Because the use of the language is integrated into the daily activities of the classroom, children use the language unselfconsciously and habitually. They also engage with many of the spoken language enrichment and early literacy activities in the language other than English, in the same way as

they work with them in English, but they do this work with the adult who speaks the language habitually in the environment.

If there is no adult speaker of another language available to spend extended periods of time in the Montessori setting, and especially where there are children whose home language is a language other than English, the teacher will often incorporate awareness of another language into the *lessons of grace and courtesy*, language enrichment and word study activities. For example, in *grace and courtesy lessons* or in language enrichment activities, as well as exploring English expressions and vocabulary, the teacher might ask a child whose home language is not English how they say the same thing at home, or how their parents or grandparents might say it. In word study activities, children might learn that many words used in English have come to us from languages other than English.

Engagement with a language other than English inspires in children interest in and respect for other cultures, especially when the language, and the culture represented by the language, is integrated into the other areas of the curriculum. For example, activities and artefacts from the culture might be integrated into the *practical life* area, or pictures relating to the language and its culture might be included in picture material placed in the language area.

Digital Technologies and Children Aged from Three to Six

In recent years there has been much debate about the integration of digital technologies, specifically the use of computers, in early childhood settings (see, for example, Edwards 2005). In the view of Montessori educators the disadvantages of computer use in early childhood settings outweigh the advantages. For this reason, computers are generally not found in Montessori early childhood settings for children under six years of age.

In the Montessori view young children learn best through multisensory, concrete experience. This is especially true of children from birth to three years of age, but remains significant for children aged from three to six. During the years from three to six children's development continues to depend on physical movement. Increasingly, children become interested in manipulating real objects to achieve meaningful goals in the concrete and social world around them. During activity of this type, as children learn to regulate and refine the movement of their hands, they are also learning to regulate their mental attention, and thus, their powers of concentration. In addition, purposeful activity that involves manipulating real objects enables children to refine their powers of perception and discrimination using all their senses. During these years children also need to interact with people who are physically present in order to develop the ability to build personal relationships and culturally appropriate behaviour.

When children sit in front of a computer screen, they are not using all their muscles, either large or small. In addition, much of the regulation of the activity is driven by the computer software rather than the children themselves. The range of perceptual and intellectual discrimination and judgement demanded of children is reduced during screen-based activity. Furthermore, children are less likely to interact meaningfully with the people around them because the goals they can achieve with screen-based computer software are less grounded in daily family and community life. In Montessori early childhood settings screen-based activity has the potential to displace children's work with the Montessori materials.

The Montessori approach to the use of screens in early childhood settings is supported by the *Healthy eating and physical activity guidelines for early childhood* (Department of Health and Ageing 2009). In these guidelines screen-time is defined as inactive 'non-productive sedentary behaviour', which over long periods is associated with:

- less active, outdoor and creative play time
- an increased risk of being overweight
- sub-optimal muscle and bone growth
- unhealthy eating habits
- poorer social skills
- fewer opportunities to develop decision-making, self-awareness and self-regulation skills
- slower development of language skills and short-term memory
- television-viewing habits that continue through childhood. (Department of Health and Ageing 2009: 71-3).

For this reason, the guidelines argue for limiting, or even excluding, screen-time from early childhood settings. The limiting of screen time in early childhood settings is also recommended in *I move we move* guide (NSW Health 2009: 7.1).

Montessori educators recognise that there are children who may not have access to digital technologies at home and that this raises questions of equity. Nevertheless, in the Montessori view, the knowledge and skills children develop through work with the Montessori materials prepares them very effectively for later use of digital technologies. Experience in Montessori schools has demonstrated that children who have made the transition from the *Children's House* setting to the next stage of schooling, even if they have not had computer access at home, are able to use computers with ease and success at later stages of schooling. This may be because the skills developed in the *Children's House*, especially in the exercises of *practical life* and *the exercises of the senses*, indirectly prepare children for successful computer use. These skills include:

- fine motor control and coordination that prepare children to use a mouse and a keyboard
- the ability to sequence and to observe
- the ability to manage abstract concepts
- higher order thinking and problem-solving skills
- procedural thinking.

These skills become a resource children apply when they later work with digital technologies. Furthermore, successful engagement with digital technologies demands the ability to be *multiliterate*, in other words, to be literate in 'multimodal ways of communicating through linguistics, visual, auditory, gestural and spatial forms' requiring 'the knowledge and skills needed to read, write and use spoken and written language and sounds and images' (Hill 2007: 56). Montessori educators would argue that the diverse multimodal resources and activities in Montessori early childhood settings equip children *par excellence* with the knowledge and skills that will set them up for success in a world in which digital technologies and multiple forms of literacy play an important role.

Digital technology is, however, a resource used by the adults in Montessori early childhood settings. For example, pictures and information accessed via the Internet are regularly used to prepare and customise resources to meet the specific learning needs of individual children. Digital cameras are also used to record and document children's progress, as well as excursions or other special events. Teachers also use digital technologies to keep records and to communicate with families and colleagues.

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