MONTESSORI AUSTRALIA

Montessori National Curriculum

Second Plane of Development from Six to Twelve Years

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The Montessori National Curriculum for the Second Plane of Development from Six to Twelve Years

Introduction to the Second Plane of Development

The first six years of life lay down the foundation for all future development of human beings. During these years, children experience extraordinary development in all facets of their lives. Their physical development is phenomenal, as is the development of personality, sociability and spirituality. At the same time, they acquire both language and culture. The second six years of life build on all these developments and acquisitions as children continue the process of self-construction. The nature of this process, however, changes because the characteristics of children beyond the age of six are very different.

The distinguishing features of the Montessori approach continue to underpin the Montessori curriculum for children from six to twelve years. Children are given the freedom to learn through their own activity and exploration, and, in the process, to become increasingly independent. The curriculum aims to develop in children the qualities of self-confidence, self-direction, self-discipline and persistence, in tandem with the ability to concentrate, to move with coordination, to interact with others with grace and courtesy and to take responsibility for the order of the environment and for their own learning. The preparation of the learning environment, and the resources and activities offered to the children, however, are matched to the characteristics of the second plane of development.

Characteristics of the Second Plane of Development

While the first plane of development is one of rapid physical growth and transformation, the second plane of development is characterised by physical stability and steady growth. Because less energy is being used for physical growth, children in the second plane of development have increased stamina. These stronger, healthier children are more adventurous and daring, often willing to try physically challenging things, and to ignore scrapes and bruises in order to demonstrate their increasing strength and toughness. This increase in physical stamina can also manifest itself as a capacity for sustained intellectual work. Children in this plane of development are more receptive to intellectual learning than at any other time in their lives.

In the Montessori tradition children in the first plane are said to have an *absorbent mind*, because they absorb, unconsciously, every aspect of their environment, language and culture. Before the age of six children are interested in the phenomena around them, both *what* phenomena are and *where* they are located, physically, socially and mentally. From about the age of six, however, the mind loses the ability to absorb the environment unconsciously. Instead, children begin to use *reason and logic* to learn about their world consciously. Typical questions asked by children of this age include *why*, *how* and *when*. This is a time when children are developing great intellectual power.

In the second plane of development, just as in the first plane, children first learn about the world through the senses. In the Montessori curriculum for the second plane of development, wherever possible, concrete materials continue to be used to introduce new concepts. For example, children experience in concrete form the regular increase in three dimensions of a graded tower of cubes, or the concrete representation of square root and cube root. The opportunity to manipulate concrete representations of abstract concepts helps children build images of these concepts in their minds. These images, gained initially through sensory experience with concrete materials, help children in the second plane of development to understand and work with, for example, patterns, sequences, algorithms and theorems. In other words, these images become tools for thinking, enabling children to use, and strengthen, their powers of logical reasoning across the discipline areas of the curriculum.

An important task for children in the first plane of development is to learn to recognise what is real and what is not. For this reason, in the Montessori *Children's House*, children are presented with true information about real things, for example, plants, animals and geographical features. Beyond the age of six, however, the *imagination* becomes an important intellectual tool. Children in the second plane of development use their imaginations to learn. This process is described by Dr Montessori (1973/1948: 15-16) in the following way:

> *The secret of good teaching is to regard the child's intelligence as a fertile field in which seeds may be sown, to grow under the heat of flaming imagination. Our aim therefore is not merely to make the child understand, and still less to force him to memorise, but so to touch his imagination as to enthuse him to his inmost core. We do not want complacent pupils, but eager ones; we seek to sow life in the child rather than theories, to help him in his growth, mental and emotional as well as physical, and for that we must offer grand and lofty ideas to the human mind, which we find ever ready to receive them, demanding more and more.*

The imagination becomes the basis for abstraction, a mental tool developed by children during the second plane of development. The ability to abstract is the ability to retain an image of a sensory experience in the imagination so it can be recalled at any time, even when that experience is no longer physically present.

During the second plane of development children broaden their horizons beyond the confines of the family and into the wider society, most specifically into a new level of social life with their peers. They exhibit a great loyalty to their peer group and the evaluation of the group becomes paramount. During this time children are beginning the process of becoming independent from the family, a step they must take if they are eventually to make mature attachments beyond the family.

Children in the second plane of development are intrigued by the unusual and the extraordinary. They also look up to those they perceive to be heroes. These potential role models inspire children to stretch themselves and better themselves in some way. At the same time children of this age are developing and honing their conscience, their ability to tell right from wrong. Where young children might tend to accept what their parents tell them about right and wrong, beyond the age of six children want to work this out for themselves. They earnestly want to know what is right or wrong, good or bad, fair or unfair, but they also want to know why.

Montessori Prepared Environment for the Second Plane of Development

The preparation of the Montessori learning environment for the second plane of development and the design of the resources and activities offered to these children are based on the Montessori understanding of the distinctive characteristics of children of this age.

The Montessori environment for the second plane of development is designed for a mini-community of peers. As children begin to disengage from the family, they strive to 'belong' to, and become accepted by, a new community, this time of peers. Membership of this new community supports children as they become increasingly independent of the family, an independence that enables them to do things by themselves, and for themselves and others. A social environment of this type enables children, over time, to mature socially. In a community of peers, the first question children ask is, 'Can we work together?' In the Montessori learning environment this community provides them with the opportunity to collaborate on research projects and to share information.

In the Montessori *Children's House*, children usually choose to work with the Montessori materials on their own. For this reason, most lessons are given to one child at a time. One of the first signs that children are psychologically making a transition to the second plane of development is that they begin to prefer working with other children. This way of working, characteristic of the second plane, is not simply working next to another child using a different material. Instead, it is working with another child, or a small group of children, cooperatively on the same task to achieve a shared goal. For this reason, lessons in the environment prepared

for children in the second plane of development are given to small groups of children. Children who have had the same lesson are then able to follow up the work together.

Transition from the *Children's House* to the Environment Prepared for Children over Six

When, in the *Children's House*, older children choose to work together most of the time, they are ready to visit the environment for children in the second plane of development. This step begins their transition to the new learning environment. Ideally, the environment for the next plane of development is adjacent to the *Children's House* so that children are free to visit whenever they feel ready. Older children are also able to return to the *Children's House* for a visit. Older children might read to a small group of younger children, give lessons, help with games or with greetings and leave-takings. Service of this type is expected of the older children. If the architecture of the school sets up obstacles to the free movement of children between classrooms, then such opportunities are created through planning.

Cosmic Education: A Curriculum for Children aged from Six to Twelve Years

The curriculum offered in the Montessori environment prepared for the second plane of development is called, by Montessori educators, *Cosmic Education*. This curriculum presents children with a full range of educational disciplines, including mathematics and language, as well as the arts, sciences and social sciences. The materials and exercises for each discipline area help children build a conceptual order, and classification materials associated with each discipline help children construct a mental order. The educational disciplines, however, are not presented to children as discrete areas in defined blocks of time, but in the form of an interconnected, interrelated and open-ended curriculum. The children are shown how each topic is related to other topics in the same subject area and to other subject areas. The interconnections between the disciplines happen at different points of time and in different ways for different children. In this way, the curriculum is experienced as a coherent whole, individualised to each child's interests and learning style, rather than as an assortment of unrelated pieces of information. This approach can be adjusted to match the learning styles of both global and linear thinkers and helps individual children to relate their predominant style of thinking to the thinking styles of others. The range of the *Cosmic Education* curriculum is very broad, and covers topics not always offered in primary school.

Pedagogy

The Montessori curriculum for children in the second plane of development has evolved over the past one hundred years as, first, Dr Montessori, and later, educators within the Montessori movement, experimented and observed:

- *what* children of this age want to learn
- *when* they want to learn it
- *how* they want to learn it
- *what materials and activities* can best help them to learn.

In the Montessori environment prepared for children in this plane of development, most lessons are given to small groups of children. Children spend a great deal of time working with others. Individual children, nevertheless, progress at their own rate.

There are two main types of lessons:

- great lessons
- key lessons

The *great lessons* are fable-like stories that provide children with an expansive and imaginative overview of a whole area of the curriculum. *Key lessons* are brief lessons that provide students with just enough information about a certain area of knowledge, or a skill, principle or technique they need to master in order for them to explore independently an area of interest emerging from a *great lesson*.

Careful records are kept of all lessons each child receives and the work that each child does. Children participate in regular, individual *conferences* with the teacher. These conferences are conducted so that children learn to evaluate their own level of mastery of materials and activities presented in previous lessons and their readiness for new lessons. In this way they become co-evaluators of their own work with the teacher. At the end of each conference the teacher asks if there are any lessons the child would like to receive that have not yet been mentioned. This helps the children take ownership of their own learning. Information collected at individual conferences is added to the record of lessons for each child. The teacher uses these records to plan future lessons, and groupings of children for these lessons. Occasionally a child needs to repeat a lesson. In this case the child may join the next group of children to be given the lesson or the child may receive an individual lesson if no one else needs the lesson at that time.

The Great Lessons

Dr Montessori observed that children in the second plane of development ask questions about the universe, the earth, life that has evolved on earth, and their place in this universe. In response to their questions she developed five *great stories,* or *great lessons,* that set the stage for an integrated approach to the curriculum offered to answer those questions. The first three *great lessons* introduce children to:

- the formation of the universe, the solar system and the earth
- the evolution of life on earth
- the coming of human beings to the earth.

The fourth and fifth *great lessons* are about the two great human inventions around which the curriculum is structured:

- communication through signs, in particular the alphabet
- development of numbers

These five *great lessons* create a whole view, or overview, of the curriculum, into which details, provided by subsequent lessons, may be placed in relation to the whole and to one another. In this way, education becomes a coherent, interrelated whole rather than an assortment of unrelated pieces of information.

The *Cosmic Education* curriculum begins with the *great lessons*. Instead of giving children tiny, disconnected details, these stories give children the broad vision their expanding intellectual power demands. They become the framework for all subsequent lessons and activities, ensuring the coherence of the curriculum. In response to the children's interests sparked by the *great lessons* the teacher prepares lessons to harness those interests. The environment is designed to provide children with space and uninterrupted time to follow these interests, for example, in a *great work*.

Great Work

Because children in the second plane of development like to exert maximum effort, they often initiate a *great work,* in other words, a work that completely absorbs them for an extended period of time. During such work children develop their ability to cooperate with others as well as to concentrate for longer periods of time.

The follow-up work children complete after each lesson does not take the form of work sheets because, when children come to the end of a worksheet, psychologically they perceive the work as finished. Without the arbitrary limit set by a worksheet, children become very inventive in designing ways to work with the information or to practise the skill. Through invention of this sort, the information becomes their own, or the

skill is mastered. When children are free to work in this way, they become completely absorbed in large endeavours. Exerting maximum effort and being creative become habits. This phenomenon has been observed in Montessori environments for children of this age so frequently that it has been named *great work*. For this reason, the Montessori environment prepared for children of this age provides both the space and the uninterrupted time for this kind of activity to occur.

During a *great work,* children build and expand their understanding, repeating the original lesson in a variety of ways. With each new understanding children appear to enjoy 'flexing their mental muscles', and often strive to exercise that understanding in a big way. An important aspect of this type of work is the opportunity to talk with their peers. Children of this age love to share and discuss ideas with their friends. This talk is important because it helps children develop their *reasoning*, the reasoning mind being a distinguishing characteristic of this plane of development. Children of this age want to know the reasons for things. When they are investigating a particular topic, they research and discuss using questions such as: *Why is this like this? How did this happen?*

The Environment

In the Montessori curriculum for children in the second plane of development two environments are offered to the children. The first environment is the classroom and the second is the world outside the classroom. The two environments together are used to:

- deliver the *Cosmic Ed*ucation curriculum
- give children the opportunity to engage actively with the curriculum.

The *Cosmic Education* curriculum follows the principle of 'just enough'. This means that the environment provides 'just enough' in the way of lessons, materials and information to equip children to proceed on their own. It is not the responsibility of the Montessori teacher to satisfy the vast curiosity children of this age have to know and to learn. Instead the teacher's responsibility is to supply just enough information so the children will be eager to know more and to search for that knowledge and skill independently. The teacher helps them learn how to find out more on their own as well as how to interact with the material, information or skill in order to make it their own.

In summary, the Montessori environment for this age group is not designed to contain all the answers to the children's questions. In fact Dr Montessori warned that offering children too much in the learning environment can be as detrimental as offering too little. Instead the environment provides reasons for children to go out into the world in order to learn more. This is why the second environment for primary children is the world outside of the classroom. The world is made part of the children's environment through the *going out* programme.

Going Out

While occasional field trips planned by the teacher and involving the whole class are one element of the Montessori *Cosmic Education* curriculum, the *going out* programme is something different. *Going out* is initiated, planned and carried out by the children themselves. This generally involves small groups of children who have a common interest. Activities of this kind begin simply and then grow in complexity over the primary years. If the class has a fish tank, for example, younger children may arrange for a trip to the pet shop to buy fish food. Initially, the teacher helps children with the planning process and shows them how to find out when the shop is open and how to get to and from the shop. By the time the children are older, they engage in a more complex process that includes:

- establishing that they have a need to go out
- deciding what kind of outing would serve their purpose
- obtaining the necessary information
- finding out where to go
- finding out how to get there

- researching the costs involved
- establishing the amount of time needed
- planning what needs to be taken on the outing
- inviting chaperones.

The prepared environment includes a range of resources for children to use as they plan an excursion beyond the classroom. These might include:

- brochures and other information about places to go for particular kinds of experiences
- phone books and a telephone
- maps and a street directory
- email and Internet access

To help children prepare for *going out*, they are given *how to* lessons, including:

- how to telephone for information or to make appointments
- how to read a map or street directory,
- how to search for information on the Internet
- how to use email
- how to use public transport
- how to conduct interviews
- how to take notes
- how to write letters of inquiry and *thank you* notes.

At no time do children leave the school unaccompanied; one or more adults always accompany children when they go out. The role of the adult/s is to ensure the children come to no harm. The children themselves take responsibility for all aspects of the trip.

Abstraction and Imagination

The resources and activities in the Montessori learning environment for this plane of development are designed to aid the progression to *abstraction*. Many Montessori materials represent abstract concepts in concrete form. Children manipulate these materials to discover the concepts, working with the materials for as long as they need. They cease using the materials when they can manipulate the concepts abstractly. The ability to abstract is interwoven with the ability to imagine. With their *imagination* children of this age can experience and learn about all aspects of our universe, whether phenomena far out in space, places on the other side of the world, or particles too small for the human eye to see. When, for example, children of this age have seen a lake and understand what a lake is, they can imagine lakes anywhere in the world. If they have experienced snow, they can imagine the South Pole. Imagination also gives them the power to go backwards in time and imagine what life must have been like before there were grocery shops, a time when human beings had to find all their own food in order to survive. The Montessori learning environment for this age offers children an extensive array of images of this type in the form of stories, charts and experiments.

Social and Ethical Development

The learning environment also accommodates the hero worship so common to this age group by telling true stories of people from diverse times and places, stories that reveal the characteristics of these people, what they have done and the service they have given. Such stories inspire a sense of gratitude in the children for the contribution of others and may show them ways of contributing to the community and serving humanity themselves.

At the same time, children of this age are developing a sense of right and wrong, a sense of morality. This area of development is supported in the Montessori learning environment where children are free to make their

own choices and to choose their own workspace and work companions. This freedom carries with it responsibilities. Socialising and working within a community of peers teaches children how to live and work together. *Lessons in grace and courtesy* provide the knowledge and support children need to succeed in social interactions. At the same time, the *great story of the formation of the universe* introduces children to the laws of physics that operate in the universe. The story demonstrates how these laws preserve and protect the earth and make it possible for life to exist. Children also learn about past civilisations and how they developed laws that enabled them to live together. Through these stories, and the work that follows, children come to understand the benefit of laws and rules in all contexts, natural and social.

Children at this age have a heightened sense of justice and want everything to be fair. They practise negotiation and mediation skills among their own society of peers. There are regular class meetings for children of this age. Topics discussed at these meetings often include the concept of fairness along with issues of right and wrong. The interest children of this age have in understanding morality often leads to a deep sense of justice, as well as compassion for less assertive or younger children and people everywhere who are in need of help.

The *Cosmic Education* curriculum reveals to children the gifts they have received from the natural environment and from human society. The curriculum is designed to develop a sense of gratitude and of responsibility in relation to the care of the earth and to the care of people on the earth. Through their engagement with this curriculum some children may discover their own life's vocation, for example, preserving the natural environment, or attending to the needs of others. As children increasingly understand how richly they are blessed both by the natural world and the work of other humans, their response is often an ambition to offer service of their own.

The Montessori environment prepared for the second plane of development prepares children for *adolescence* by fostering self-regulation, social and intellectual skills and a vision of the place of humanity in the universe. This approach provides a framework that supports young people when they are faced with critical choices in the future.

Cosmic Education and Digital Technologies

As children pursue their research interests across the *Cosmic Education* curriculum, they draw on a vast array of resources, including face-to-face contact with teachers and experts, planning and participating in excursions and *going out* activities, as well as using paper-based, digital and web-based technologies. As new digital technologies are developed, these are added to the resources available to children in Montessori classrooms in ways that match the children's capacities and interests. Children use a range of technologies as research and production tools, including email, Internet-based communication and computer programs that enable manipulation of words, images and sound. They develop skills in using the technology as they apply it to relevant areas of the curriculum. In this way digital technologies become part of a balanced programme, without displacing paper-based skills, such as using reference books, finding books in a library, handwriting and technical drawing. It is also important that the use of digital technologies does not replace activities involving face-to-face communication and exact physical movement, for example, listening to guest speakers, preparing spoken presentations, interviewing experts, artwork and model-making, visiting museums and field work.

The use of digital technologies across the curriculum incorporates development of the following skills:

- experience with a range of computer programs to achieve a variety of goals e.g., producing text, managing data, multimedia presentations, research
- combining text, sound and images to design presentations
- collecting, interpreting, evaluating and managing information gathered through a range of electronic resources
- developing an ethical approach to the use of information and communication technologies
- applying appropriate occupational, health and safety principles to computer use.

The Montessori *great lessons* about the two great human inventions, communication with signs and mathematics, include information to account for advances in technology. Children can research the development of these technologies over time, and in this way build understanding about how the work of earlier generations has enabled humans of today to benefit from technological advances unimaginable to the people who have gone before us. Children can also use their reason and imagination to consider the directions new technologies might take us in the future, and what opportunities and challenges these advances might have in store for us.

Like educators everywhere, since the advent of the digital revolution, Montessori educators have been exploring the consequences of this revolution for children at different stages of their development (See, for example, Gebhardt-Seele 1985). They do this by applying Montessori principles to decisions made about the introduction of digital technologies into learning environments, and by ensuring that the technology matches the children's stage of development and interests. More than two decades ago, Lillard (1996: 78-79) wrote about the use of computers in Montessori environments prepared for children aged from six to twelve:

> *The use of computers in the children's research and subsequent projects is a new component in Montessori education. To date it appears that children six to nine years old develop best when their hands are more directly involved with manipulating materials in their work. It is essential during this period that the children learn to think clearly and read and write in an organized manner. Computers are therefore not included in the prepared environment for use in research studies and creative writing until the upper elementary level where the children are nine to twelve years old. By this time, the children's thinking, reading, and writing abilities have a solid foundation. They are ready to make full use of the practical advantages of computers.*

Since that time, advances in digital technologies have meant that Montessori educators are reviewing the role these technologies might play in the education of children six to nine years of age, as well as children over the age of nine. While digital technologies are now more likely to be used in Montessori classrooms for children aged from six to nine, for example, digital photography, Montessori educators strive to ensure that computer use does not detract from, but rather, enhances children's learning. It remains the case that older children in Montessori classrooms make greater use of digital technology in their research and project work for the reasons outlined by Lillard above. Lillard (1996: 79) continues by explaining how other Montessori principles have been applied to computer use in Montessori classrooms:

> *The principle of limitation, however, still holds. Even if funds and space are available, there should be only a few computers in the prepared environment. These computers can function for each type of use: one which is part of the Internet or other connecting system for doing research; one for writing; and perhaps another for developing multidimensional images (CAD/CAM) such as might contribute to architectural or design work. This minimal number of computers assures that the children become familiar with the capabilities of computers without missing the intellectual and social development that the other materials in the environment are meant to facilitate.*

Again, the advance of technology suggests that tying individual computers to separate functions is no longer relevant, but the same principles apply. Children need to master each function separately if they are to become expert users of these technologies, while at the same time they need to participate in a learning programme that balances computer use with other modes of intellectual and social development.

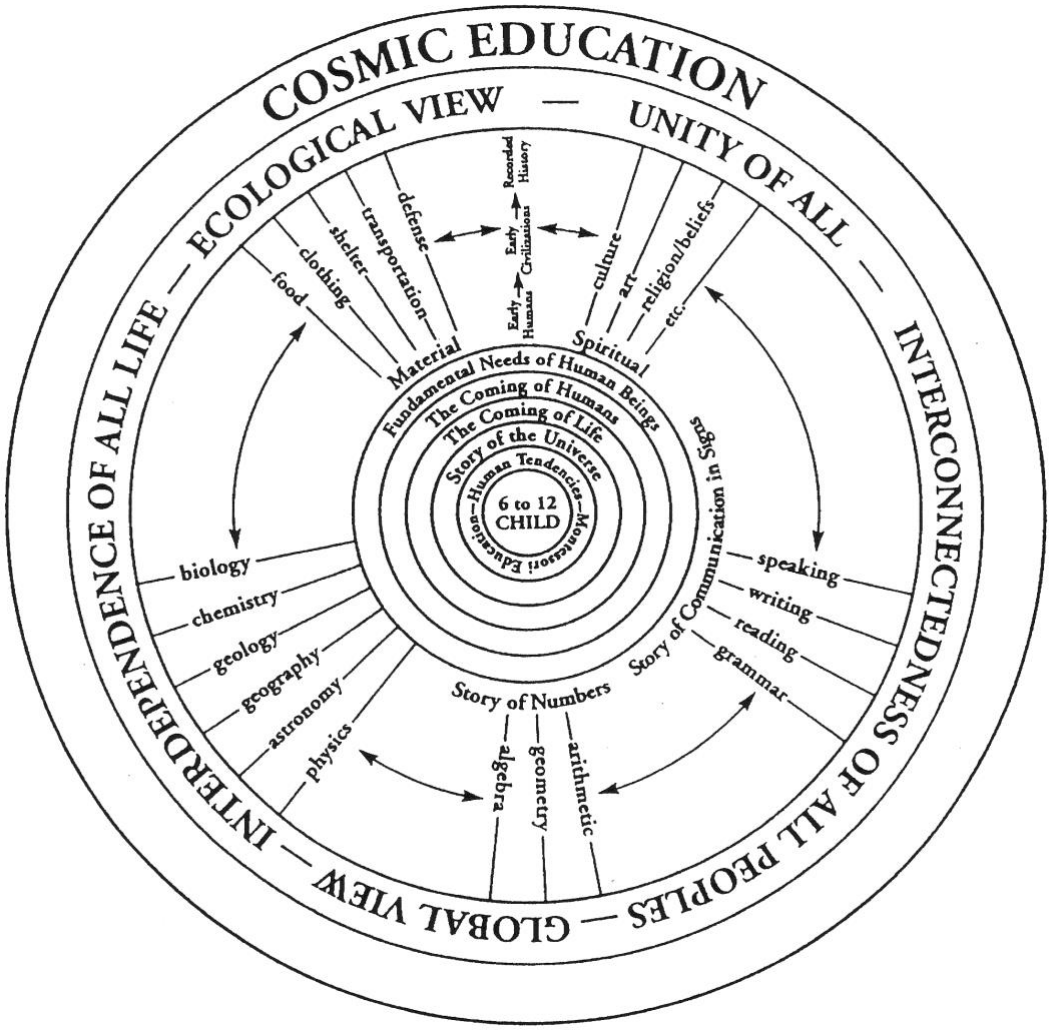
Cosmic Education: An Overview

The *Cosmic Education* curriculum for the second plane of development covers the following interrelated discipline areas:

- Language
- Mathematics, with Geometry and Measurement as distinct areas of study
- History and Social Sciences

- Science, with Geography and Biology as distinct areas of study
- Creative Arts
- Physical Education
- Languages other than English

The way the discipline areas of Montessori *Cosmic Education* are interwoven to create an integrated curriculum for children in the second plane of development is represented in the following diagram.



The main content areas of the curriculum are outlined briefly below.

Language

Language is the ability to symbolise in an abstract form objects, ideas, emotions, and events, taking them out of the immediate context, and holding them in the mind. Language work in the Montessori environment prepared for children in the second plane of development is an exploration of a great human achievement that has made possible the creation of culture and the continuation of societies. Children in the second plane of development strive to put language in context, to explore the reasons for a variety of phenomena, and to use language beyond its literal use. The study of language must therefore be presented very imaginatively; it must appeal to imagination and reason, rather than to surface reality alone.

Areas of study in the Montessori language curriculum include:

- spoken and written language
- the history of language (symbols, etymology and spelling)
- the functions of words (grammar)
- effective communication (listening and speaking, reading and writing).

Using stories, pictures, books and technology children trace the development of language through the ages. Presentations, activities and resources help them understand:

- how humans have named everything found or made and that this process continues
- how and why language constantly changes
- how language is used to express the creative impulse of humanity.

Studying the origins and historical development of words fascinates children of this age. This study becomes a foundation for spelling knowledge and contributes to understanding the history of cultures. The learning environment is a place where children continue to learn to read, to write creatively and to perfect the art of handwriting.

Mathematics

The power of the human mathematical mind is its ability to quantify with precision and to reason through logic and abstract pattern. The versatility of the mathematical mind is as great as its potential to order and understand. Since the mathematical mind is universal, it belongs to every child as a birthright, and mathematics is part of our human heritage. In addition, human beings have a tremendous capacity for reason. Children who are learning to reason need, therefore, a larger quantity of information about which to reason.

The Montessori learning environment for children in the second plane of development offers new mathematical challenges beyond those found in the *Children's House*. Children in the second plane of development do not want to be tied to concrete materials. They strive for the freedom to work at the level of abstraction. While the Montessori mathematics materials are concrete representations of abstract mathematical concepts, in this environment they are used as stepping-stones, as *keys* only. In the presentation of these materials difficulties are isolated and, in the more complex activities, concepts are synthesised. In this way children are guided towards abstraction, but the actual transition to abstraction itself is achieved by children independently. When children work abstractly without prior concrete experience, they can face obstacles to comprehension. The Montessori approach allows children to grasp mathematical concepts by first experiencing and manipulating them in concrete form. Children are given as much time as they need to learn from their successes and their mistakes, while also discovering the rewards of perseverance.

Children of this age love to reach back into history with their imaginations to reconstruct the creation of knowledge systems. Mathematics is a language used to explore and manipulate, to create and measure real objects in a real world. Children learn that mathematics has evolved from a practical need, for example, graphs and fractions as tools for recording and measuring, and algebra for problem solving. Children are encouraged to invent their own problems—especially real-life story problems—for themselves and for their friends, in order to apply and practise their mathematical understanding in practical ways.

When children work with the Montessori mathematics materials, they are presented with concrete images of abstract concepts and processes. Children use the materials to undertake quite complex mathematical processes, for example, long division or square root, much earlier than if the work were introduced using paper and pencil only. As they manipulate the concrete materials, children internalise mathematical concepts, processes and rules embodied in the materials. These are concepts, processes and rules they might otherwise have to learn by rote but without the depth of understanding developed while working with the Montessori materials.

When presenting children with new material, a Montessori teacher first orients children to the material and what it represents. The teacher then guides the children through a sequence of steps or exercises, progressing gradually, one small step at a time, from highly concrete to completely abstract representations. The exercises are sequenced in a manner that introduces a variation in use, or an additional detail, with each step. These new variations and details hold the children's interest.

At some point in the process, each child comes to the realisation that the same steps can be completed much more efficiently without the material, that is they can be completed abstractly, using only numbers, and other mathematical symbols, on paper, to find the answer. Montessori educators call this transition the *passage to abstraction*. In this way each child arrives at abstraction precisely when they are prepared for it. In many cases children come to the realisation on their own and inform the teacher; in other cases, the teacher assists a child by asking questions that lead to the realisation. By allowing abstraction to 'arrive' for each child, in the child's own time, the teacher can be assured that the knowledge is now stored in long-term memory, rather than being temporarily memorised, and can be understood and explained by the child.

Geometry and Measurement

Children first encounter the study of geometry in the *Children's House* during the *exercises of the senses.* In the *Children's House* they are given as much language to talk about geometric shapes as possible. This prepares them for the next level of geometry study they encounter in the environment prepared for children in the second plane of development. In this new environment the study of geometry gives children the tools to explore, understand and measure the world.

In the Montessori geometry curriculum children follow the historical development of the discipline of geometry. Because geometry emerged from concrete experience, with abstractions following at a later time, children study geometry by following the same sequence. Students' initial ideas about shapes and space are based on activity with concrete objects. The work uses the guided discovery approach so that the children discover the relationships, theorems and formulae for themselves.

The field of geometry provides opportunities for both inductive and deductive learning. As the children make their own discoveries, they are interested in learning about the people who first made these discoveries. Throughout the geometry curriculum they are told stories about, and are given opportunities to research, the people behind the geometry we use today. In addition to the enjoyment children exhibit in studying geometry, this work also provides them with a stimulus for intellectual development by giving them experience with logical reasoning, deduction, classification and abstract concepts.

Creative expression in art through geometry is also an integral part of its study. The Montessori geometry materials foster creative activity that involves construction of various two- and three-dimensional forms, artistic drawings and decoration.

The study of measurement in learning environments prepared for six to twelve year olds also has its origins in the *exercises of the senses* in the *Children's House*, specifically, in the discrimination, judgement and precision children apply as they contrast, compare and grade differences and similarities in, for example, size, shape, volume and mass isolated in the *sensorial* materials. When children begin the study of measurement in the environment prepared for six to nine year olds, they learn to attach a number of 'units' to concrete objects, first non-standard and ancient units of measurement based on the parts of the body, and later the standard units of the International Metric System.

History, Geography and Science

Because the Montessori approach integrates the study of history, geography and science, including biology and technology, these subject areas comprise one area of the *Cosmic Education* curriculum.

History

The Montessori history curriculum begins with the 'big picture', from the development of the universe, the solar system and the earth, to the evolution of life on earth and the coming of human beings, early civilisations and recorded history. The long labour of humans to accomplish all that is here for us to enjoy in the present is revealed to the children. The history curriculum provides a chronological framework that orders the information presented in the companion areas of study: geology, biology and science. In fact, history is considered to be the foundation of the *Cosmic Education* curriculum. Studies of geography, science and all the related disciplines flow naturally from the study of history. The starting point in any educational discipline extends back in time, and in this way can be linked to any other discipline area, in this interdisciplinary approach.

Geography

The Montessori geography curriculum is designed to show how the physical configuration of the earth contributes to the history of all people. The study of physical geography (including geology) is the basis for the study of economic geography, which reveals the interdependence of all nations and people. Geography study comprises several interconnecting areas, including:

- physical geography
- scientific understanding of geological formations/geology
- economic geography
- political geography
- mapping and graphing

Biology

The Montessori biology curriculum includes both botany and zoology. In this study children are given the means to classify plants and animals, and to understand the reasons behind the classification. The study of biology reveals that the classification of living things follows the path of evolution. The ultimate aim of this area of the curriculum is to develop an ecological understanding of the web of life, and a sense of responsibility for the natural environment. Learning systems for classifying plant and animal life also provide children with intellectual tools for ordering and relating information.

Science and Technology

In the *Cosmic Education* curriculum, the study of science and technology is interwoven into the study of history, geography and biology.

- When children study geology and geography, they are also discovering how the universe and the earth were formed. During this study children build foundation knowledge in the fields of physics and chemistry.
- When children explore biology, they are also discovering the history of life on earth.
- The history of human progress is a history of scientific discovery and technological development.

All these areas of study are accompanied by relevant demonstrations, including science experiments, and the use of impressionistic charts and timelines to generate discussion and create mental pictures.

The Montessori Curriculum for the Second Plane of Development

Language

Language is the tool used by children to explore all other subject areas, and for this reason, language is involved in all areas of learning.

In the *Children's House* children are introduced to the basic skills that underpin writing and reading. When they make the transition to the learning environment for children older than six, they are introduced to a variety of activities and resources that lead them to fluent reading and more advanced comprehension skills, described by Montessori educators as *total reading.*

Providing children with a variety of means for learning to write and read enables them to select activities and resources that match their learning style. This diverse repertoire of activities for developing knowledge and skills in both spoken and written language makes it possible for all children to experience success and enjoyment with language in all its forms and uses.

Learning to Write and Read

In the *Children's House*, after they have worked with *sandpaper letters* and the *moveable alphabet*, children often *explode* into written language. Usually, in the *Children's House*, as children learn to analyse words into their sounds, an explosion into writing occurs before reading. Only later, when children learn to synthesise sounds into words, do they begin to read. If children learn to read and write after the age of six, however, they usually learn both writing and reading simultaneously.

In Montessori environments prepared for children over the age of six, learning is no longer based simply on sensory activity and movement. Instead the exploration of language also engages the children's imagination and ability to reason. For example, from the age of six, children are interested in stories about the history of language and written symbols; these stories appeal to children's imagination. Through a *great lesson* children learn how humans began to communicate through signs. They also learn that language is a gift from the past. Listening to the story, and undertaking related research activities, give children the opportunity to develop feelings of gratitude for this gift.

In Montessori environments prepared for children aged from six to nine years, children are made aware of all that they already know about language, including the grammar they have mastered in their spoken language. In a series of active grammar games, using concrete materials, children are given technical terms for labelling the parts of their own language. Children of this age really enjoy thinking and talking about their own language. Through such work they develop clarity and conscious awareness of their language so they can use it more effectively in both its spoken and written modes.

Total Reading

Total reading is defined by Montessori educators as the ability to interpret the totality of the meaning expressed by a writer. This includes understanding the subject matter, as well as the opinions and feelings expressed, and the style used by the writer. To help children achieve *total reading*, they are given opportunities to explore:

- the history of language
- words and grammar, and their meanings
- where and how words evolved (the study of etymology)
- punctuation and spelling
- variation in meaning-making across different cultures.

The Aims of the Montessori Language Curriculum for Children from Six to Twelve Years

The aims of the Montessori language curriculum for children aged from six to twelve years include the following:

- to foster the children's interest in language, the history of language and the history of communication with signs
- to explore the etymology of words
- to develop a respect for all varieties of language
- to develop a love of books
- to understand the grammar of our language and to use this knowledge to improve fluency in reading and writing
- to use language to express thoughts and ideas (self-expression)

Language Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.LA.010 History of language	01 Imagine the origin of spoken language 02 Research simple theories of how spoken language might have developed 03 Trace the development of the English language 04 Link the origin of spoken language to human history and how language enabled humans to communicate with each other about their environment	Activities include: - stories, for example: How did language start? The story of English - research tasks e.g., tracing the development of languages other than English; exploring how other primates, or other animals, communicate; researching the spoken language traditions of Aboriginal and Torres Strait Islander cultures - drama. Resources include: - charts, e.g., language families charts - simple research and reference materials (paper-based, digital and web-based).
	05 Trace the development of written language 06 Explore early means of communicating with graphic signs, including images and marks found on surfaces such as rock, bark, wood and clay; pictographs, hieroglyphics and ancient alphabets 07 Trace the development of the English alphabet 08 Learn about the origin and derivation of words in English	Activities include: - great lesson: Story of Communication in Signs - reading factual stories - making rock art, clay tablets - creating simple codes - experimenting with pictographs and ancient alphabets - research projects e.g., exploring graphics used by Aboriginal and Torres Strait Islander peoples; tracing the development of alphabets and writing systems for other languages - creating posters and timelines - etymology activities. Resources include: - charts and artefacts - research and reference materials (paper-based, digital and web-based)
2.LA.020 Spoken language:	01 Listen and respond to stories and poems read aloud by teacher, peers and/or performers	Activities include: - grace and courtesy lessons e.g., 'how to' be an audience

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
listening and speaking	02 Listen and respond to songs	- movement and drama activities - teacher and student presentations and performances - writers' conference meetings - going out, excursions and guest performers. Resources include: - high quality children's literature and song lyrics - children's own stories and poems
	03 Develop rhythm and movement in speech 04 Recite rhymes and sing songs for an audience 05 Read aloud to an audience	Activities include: - grace and courtesy lessons e.g., 'how to' present to an audience - drama activities for voice - class presentations - choral work (speaking and singing). Resources include: - card material - high quality children's literature - children's own stories and poems
	06 Develop active listening skills 07 Respond to and give greetings and leave-takings 08 Respond to questions 09 Follow detailed spoken instructions 10 Carry out multi-step instructions 11 Take notes from simple spoken presentations	Activities include: - grace and courtesy 'how to listen' lessons - learning classroom routines - interacting in class - collaborating with peers - listening games - role-play, drama - class meetings - listening comprehension games - guided note-taking - preparing for going out - research tasks. Resources include: - class rules developed by peers - audio-visual/multimedia resources.
	12 Use appropriate intonation, gestures and eye contact when speaking 13 Make requests and offers 14 Ask questions to gain understanding and clarification 15 Initiate topic ideas in a group 16 Express an opinion and question a point of view	Activities include: - grace and courtesy lessons - role-play, drama - preparing for going out - collaborating on group projects - rehearsals for research projects completed and delivered to audiences conversations - class meetings - engaging with guest speakers. Resources include: - telephone - audio-visual/multimedia resources.
	17 Listen for key ideas and detail in spoken language	Activities include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	18 Understand and use different types of speech for different purposes and audiences 19 Report on familiar and personal topics 20 Re-tell conversations accurately 21 Re-tell stories with appropriate sequencing of events 22 Relate experiences to peers on a variety of topics 23 Use telecommunications effectively	- guided activities e.g., a spoken presentation scaffolded by an adult or peer using the spoken question game - small group conversations, role-play, drama - preparing for going out - Read-and-retell games - telling what happened on an excursion or going out - talking to parents, teachers, community members e.g., at assembly or open days, when going out - interviews - collaborating on group projects - gaining information over the telephone or from a multimedia source. Resources include: - command cards - telephone - audio-visual/multimedia resources.
	24 Present spoken reports and simple speeches 25 Explain complex concepts 26 Participate in discussions	Activities include: - class meetings, debates and discussions - role-play, drama - engaging with audiences and guest speakers - presenting completed projects - arguing for different points of view - research projects to prepare for spoken presentation or discussion. Resources include: - command cards - research materials (paper-based, digital and web-based).
	27 Learn basic concepts of voice production 28 Experience and appreciate spoken poetry performances 29 Read and perform poetry and extracts from literature 30 Improvise and act out dramatic roles 31 Experience, appreciate and participate in drama performances 32 Recognise and appreciate dialogue as an aspect of drama	Activities include: - movement, drama and voice activities - guided individual presentations - older students use voice recording software to create and edit audiobooks which are downloaded to a class iPod and made available for emergent readers - choral performances - drama presentations e.g., plays, poetry reading, film and animation making - script-writing - guest performers - excursions to poetry and theatre performances. Resources include: - high quality children's literature - card materials e.g., grammar box commands, reading commands and interpretive reading cards

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- audio-visual/multimedia resources (e.g., microphone, voice recording software such as Audacity on a laptop)
2.LA.030 Reading: word level	01 Review and consolidate knowledge of letter-sound correspondence 02 Use knowledge of single letter-sound correspondence to read and build words 03 Read and build words containing blends, recognising blends in both onset and rime 04 Recognise and generate rhyming words, alliteration patterns, syllables and sounds (phonemes) orally 05 Recognise and distinguish CVC and VC type syllables in multisyllabic word 06 Build families of words based on spelling patterns involving blends and clusters	Activities include: - exercises reviewing all single letter sounds in sets of contrasting or related sounds - vowel-consonant lesson and exercises - sound recognition and discrimination games with single letter sounds (individual and group as needed) - exercises to practise the reading and articulation of blended sounds - labelling objects and pictures - building words with moveable alphabet - word study lessons and exercises - activities researching blends in words. Resources include: - labels for objects and pictures - card materials and word lists - wall charts - moveable alphabet - selected reading material.
	07 Review and consolidate knowledge of phonograms (digraphs) 08 Read words containing phonograms, recognising phonograms in both onset and rime 09 Build families of words based on spelling patterns involving phonograms	Activities include: - *phonogram* lessons and exercises - sound recognition and discrimination games with *phonogram* sounds (individual and group) - *moveable alphabet* activities to explore *phonogram* patterns - sound recognition within cursive writing activities - labelling objects and pictures - *phonogram* research activities - word study lessons and exercises. Resources include: - phonogram folders and booklets - card material and word lists - labels for objects and pictures - small moveable alphabets in different colours - selected reading material.
	10 Recognise and read puzzle words (sight words with non-phonetic spelling)	Activities include: - etymology activities - labelling objects and pictures - word study lessons and exercises - puzzle word research activities. Resources include: - puzzle word cards and lists - card material - selected reading material.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	11 Review and consolidate knowledge of letter names 12 Review and consolidate knowledge of alphabetical order	Activities include: - games, rhymes and songs to review letter names - alphabetical order and dictionary exercises. Resources include: - wall charts - a selection of dictionaries.
2.LA.040 Reading: text level	01 Decode and comprehend words, word groups, phrases and sentences 02 Read for meaning with increasing fluency 03 Develop and extend reading skills and strategies, including: — predicting the meanings in a text using, for example, the title, cover and blurb as clues — navigating written and multimodal texts using, for example, chapters, headings, index, illustrations — skimming a text for the main ideas — scanning a text for detailed information — reading for inferred and/or implied meanings	Activities include: - exercises with reading folders (booklets, jumbled text, pictures, labels) in all curriculum areas - exercises to build a range of reading skills and strategies e.g., library activities, modelled and guided reading activities - reading books written for emergent and beginning readers - interpreting the meanings in texts in a variety of ways e.g., written and spoken responses, drama and visual arts - expanding reading repertoire as interest, fluency and comprehension develops. Resources include: - card materials and labels - reading folders and command cards in all curriculum areas - literary and factual reading material matched to interest.
	04 Participate in drama and visual arts activities linked to reading	Activities include: - movement and drama activities with reading commands and interpretive reading cards - acting out increasingly complex commands - interpreting dramatically extracts from literature - interpreting extracts from literature using the visual arts - readers' theatre. Resources include: - reading commands - interpretive reading cards - quality children's literature - a range of visual arts media and resources.
	05 Read for enjoyment	Activities include: - reading literary and factual texts individually; and occasionally in small groups - visiting the library - participating in Book Week activities - authors' visits - readers' theatre - reading to others for fun. Resources include: - quality children's literature

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- quality factual texts.
2.LA.050 Word study	01 Recognise and use the parts of words: — word bases, — prefixes — suffixes — syllables 02 Recognise and use compound words and word families 03 Recognise and use synonyms, antonyms and homonyms, homophones and homographs	Activities include: - word study lessons and exercises - word building with moveable alphabets - word matching and sorting exercises - style study of student's own writing - spelling exercises and practice. Resources include: - word study charts and cards - small moveable alphabets in different colours - grammar symbols.
	04 Use etymology to understand the origins of words and word families	Activities include: - lessons and exercises on word origins (including Latin and Greek roots) - building lists of words with the same origin - providing students with the etymology of each technical or specialised term introduced in all areas of the curriculum - research projects. Resources include reference materials, including dictionary, etymological dictionary and thesaurus (paper-based, digital and/or web-based).
	05 Expand vocabulary	Activities include: - correct expression matching and sorting exercises - word study lessons and exercises - style study of student's own writing and of literary and factual texts integrated into the curriculum - learning technical and specialised terms in classified sets in all areas of the curriculum. Resources include: - correct expression card material - word study charts and cards - dictionary and thesaurus (paper-based, digital and/or web-based) - grammar symbols - classified naming material relating to various subjects (pictures, labels, jumbled text, booklets).
2.LA.060 Grammar study for reading fluency: functions of	01 Recognise nouns 02 Identify the function of nouns 03 Classify types of nouns: — masculine and feminine — common and proper — singular and plural	Activities include: - spoken language stories, lessons and games - labelling, matching and sorting exercises - dramatising commands based on nouns - writing activities to record work. Resources include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
words and grammar boxes	– concrete and abstract – types of concrete nouns (material, collective) – types of abstract nouns (quality, state, action)	- grammar boxes II: noun card material and commands - noun classification charts and card material - noun grammar symbol - dictionary.
	04 Recognise articles 05 Identify the function of articles 06 Classify types of articles: – definite and indefinite – articles for singular and plural nouns	Activities include: - spoken language stories, lessons and games - using article-noun structures to label objects in a miniature environment - using colour-coded cards to compose noun groups from articles and nouns - using grammar symbols to reveal article-noun pattern - writing activities to record work - using cards to build the system of English articles. Resources include: - article box objects and labels - grammar boxes II: card material and commands - box of grammar symbols - article classification card material.
	07 Recognise adjectives 08 Identify the function of adjectives 09 Combine adjectives with nouns and articles to build *noun families* (noun groups), using accurate word order 10 Identify the members of the *noun family* (article-adjective-noun) 11 Classify types of adjectives: – qualitative – interrogative – demonstrative – possessive – numeral (indefinite and definite) – distributive – positive, comparative, superlative	Activities include: - spoken language stories, lessons and games - word order transposition game - using noun families on cards to label objects in a miniature environment - grammar boxes III reading games, commands and experiments: composing noun families with colour-coded cards, symbolising, to reveal noun family pattern, using adjective labels to reveal fine distinctions - adjective games e.g., the detective adjective game, the paper game, what quality is suitable? - adjective research activities - writing activities to record work. Resources include: - grammar symbols, both 3-D and 2-D, for spoken language activities - noun family charts - miniature environment and card material - adjective research chart - grammar boxes III: card material and commands - box of grammar symbols - adjective classification charts and card material.
	12 Recognise verbs 13 Identify the function of verbs that represent actions 14 Recognise the contrasting functions of verbs and nouns	Activities include: - spoken language stories, lessons and games - games to reveal different types of verbs e.g., action v thinking verbs, transitive v non-transitive verbs

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	15 Use verbs with *noun family* (article-adjective-noun) in sentences. 16 Place verbs in sentences effectively 17 Recognise the three main tenses of verbs: past, present and future	- grammar boxes IV reading games, commands and experiments: dramatising and experimenting with action verb antonyms and synonyms, composing sentences with colour-coded cards, symbolising to reveal grammar patterns - transposition activity to experiment with order of verbs and noun groups in clauses - games that reveal contrast and agreement between verbs and nouns - writing activities to record work. Resources include: - grammar symbols, both 3-D and 2-D, for spoken language activities - red sphere (verb symbol) and black square-based pyramid (noun symbol) on special tray - grammar boxes IV: card material and commands - box of grammar symbols - logical agreement of nouns and verbs card material.
	18 Recognise prepositions 19 Identify the function of prepositions 20 Use prepositions with the noun family (article-adjective-noun), placing them in front of noun groups (phrases) 21 Use prepositions in sentences made up of noun families (article-adjective-noun) and verbs	Activities include: - spoken language stories, lessons and games - using prepositions to place objects in relation to each other - grammar boxes V reading games and commands: dramatising the work of prepositions, composing sentences with colour-coded cards, symbolising to reveal grammar patterns - transposition activity to experiment with preposition word order i.e. location of preposition in phrases - writing activities to record work. Resources include: - miniature environment and card material - grammar boxes V: card material and commands - box of grammar symbols.
	22 Recognise adverbs 23 Identify the functions of adverbs 24 Use adverbs in sentences made up of noun families (article-adjective-noun), verbs and prepositions 25 Place adverbs in sentences effectively 26 Classify types of adverbs: — manner — place — time — quantity — comparison	Activities include: - spoken language stories, lessons and games - grammar boxes VI reading games and commands: dramatising the work of different types of adverbs, composing sentences with colour-coded cards, symbolising to reveal grammar patterns - transposition activity to experiment with adverb word order - games that reveal connection between adverbs and verbs - writing activities to record work. Resources include: - grammar boxes VI: card material and commands

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- box of grammar symbols - logical agreement of adverbs and verbs card material.
	27 Recognise pronouns 28 Identify the function of pronouns 29 Use pronouns in sentences made up of *noun families* (article-adjective-noun), verbs, prepositions and adverbs 30 Combine pronouns with verbs and adverbs to build *verb families* (clauses), using effective word order 31 Classify types of pronouns: — personal — demonstrative — relative — interrogative — possessive	Activities include: - spoken language stories, lessons and games - grammar boxes VII reading games and commands: dramatising the work of different types of pronouns, composing sentences with colour-coded cards, symbolising to reveal grammar patterns - transposition activity to experiment with pronoun word order - games that reveal agreement between pronouns and verbs - writing activities to record work. Resources include: - verb family charts - grammar boxes VII: card material and commands - box of grammar symbols - pronoun-verb agreement card material.
	32 Recognise conjunctions 33 Identify the function of conjunctions 34 Use conjunctions in sentences made up of *noun families* (article-adjective-noun), verbs, prepositions, adverbs and pronouns 35 Place conjunctions to join clauses accurately	Activities include: - spoken language stories, lessons and games - grammar boxes VIII reading games and commands: dramatising the work of conjunctions, composing sentences with colour-coded cards, symbolising to reveal grammar patterns - transposition activity to experiment with word order involving conjunctions - writing activities to record work. Resources include: - grammar boxes VIII: card material and commands - box of grammar symbols.
	36 Recognise interjections 37 Identify the function of interjections 38 Use conjunctions in sentences made up of *noun families* (article-adjective-noun), verbs, prepositions, adverbs, pronouns and conjunctions	Activities include: - spoken language stories, lessons and games - grammar boxes IX reading games and commands: dramatising the work of interjections, composing sentences with colour-coded cards, symbolising to reveal grammar patterns - transposition activity to experiment with word order involving interjections - writing activities to record work. Resources include: - grammar boxes IX: card material and commands - box of grammar symbols.
2.LA.070	01 Recognise and identify the function of personal pronouns	Activities include: - spoken language lessons and games - writing activities to record work

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Grammar study: detailed study of the verb	02 Use personal pronouns with verbs in the present tense	- spelling exercises - comparing use of English personal pronouns with use of pronouns in a LOTE. Resources include: - charts and card material - box of grammar symbols - reading material - reference books.
	03 Recognise and use strong and weak verbs (verbs with irregular and regular past tense forms) 04 Recognise and use personal pronouns with strong and weak verbs in present, past and future tenses 05 Recognise and use auxiliary verbs (*to be/to have*) in present, past and future tenses 06 Explore compound tenses: — perfect tenses (past, present, future) — continuous/imperfect tenses (past, present, future) — combinations of perfect and continuous 07 Explore some of the following aspects of verbs: — negative verb forms — infinitive (non-finite) verb forms — voice (active, passive) — mood (indicative: declarative and interrogative, imperative, subjunctive) — progressive (phased) verb forms — use of reflexive pronouns with verbs — transitive and intransitive verbs — linking (relating) verbs e.g., to be, appear, seem, look, and complements 08 Use knowledge of verbs in creative and factual writing	Activities include: - spoken language lessons and games - writing activities to record work - spelling exercises - research projects - comparing use of English verbs with use of verbs in a LOTE - related creative and factual writing tasks. Resources include: - charts and card material - box of grammar symbols - sentence analysis materials - reading material - reference books - wall charts/word banks of different verb forms and types.
2.LA.080 Grammar study for reading and writing fluency: Sentence	01 Analyse simple sentences to identify: — subject — predicate — direct object	Activities include: - sentence analysis lessons - sentence reading and analysis exercises tearing sentences written on strips of paper into parts and labelling and setting out sentence structure with wooden sentence analysis material

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
analysis (simple and compound)	02 Write simple sentences containing subject, predicate and direct object 03 Analyse simple sentences to identify: – subject – predicate – direct object – attributive and appositive structures (qualifiers after the noun in noun groups) – adverbials – indirect object 04 Write simple sentences to include all parts revealed in *sentence analysis* exercises 05 Analyse simple sentences with understood (elliptical) subject 06 Analyse simple sentences with the order of the parts inverted 07 Analyse simple sentences with verb *to be* and other linking (relational) verbs e.g., *seem, appear, look* 08 Identify compound sentences and label the parts 09 Identify coordinating conjunctions in compound sentences 10 Write compound sentences using coordinating conjunctions	- recording analysis using sentence analysis paper - sentence writing activities using chart A as a guide to compose short and long simple and compound sentences - composing short and long simple and compound sentences abstractly - creative writing and research tasks. Resources include: - sample simple and compound sentences derived from student writing and student reading material, both literary and factual texts - sentence analysis boxes 1 and 2 (wooden circles, arrows, triangles) - sentence analysis charts - sentence analysis paper - reading material to find sentences to analyse - card material - word banks of coordinating conjunctions.
2.LA.090 Grammar study for writing: study of style	01 Understand concept of writing style 02 Explore own writing style 03 Develop and enrich vocabulary	Activities include: - using knowledge about grammar and grammar symbols to explore style of writing used in different texts - using knowledge about grammar and grammar symbols to explore own writing style - creating word webs and mind maps - participating in guided activities to expand and enrich own writing e.g., composing literary and factual texts scaffolded by an adult or peer using the written question game - guided brainstorming in groups or individually - individual and group writing projects. Resources include: - box of grammar symbols - a range of different types of texts - sample word webs and mind maps.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	04 Explore and experiment with meanings in sentences and texts 05 Use knowledge of grammar patterns to expand and enhance meaning-making in sentences and texts	Activities include: - identifying and symbolising grammar patterns in sentences and texts - transposing the order of words and structures in sentences and texts - using knowledge of grammar patterns to amplify meanings in sentences and texts - discussing and evaluating variation in meaning resulting from analysing, transposing and amplifying meanings in sentences and texts. Resources include: - grammar boxes II-IX - box of grammar symbols - students' own writing - literary and factual texts.
2.LA.100 Reading and viewing literary texts	01 Experience and appreciate a variety of quality children's literature: – prose – poetry – drama, film, multimedia and e-literature 02 Gain experience in selecting literary texts for enjoyment at an appropriate reading level 03 Select extracts from familiar literary texts to analyse grammar patterns 04 Select extracts from familiar literary texts to analyse an author's style 05 Explore and understand the elements of literary texts: – setting, characters, plot – dialogue – mood/atmosphere – themes – message or moral 06 Present opinions about a literary text supported by simple evidence from the text 07 Appreciate historical background of selected literary texts 08 Experience figures of speech used in literary texts: – idioms – simile and metaphor – personification – alliteration	Activities include: - going out e.g., to bookshops, libraries, literary events - guided small-group activities - reading, analysing and discussing literary texts - research projects e.g., creating literary timelines, researching different types of figures of speech to create charts or booklets, researching authors - literary projects e.g., preparing an anthology of favourite poems; preparing poetry or prose extracts for performance; model-making based on setting or characters, preparing multi-media presentations based on literary texts; designing illustrations for favourite literary texts - Book Week activities - author visits. Resources include: - quality children's literature, both prose and poetry, including picture books and multimedia texts - box of grammar symbols - form and rhyme charts - metre charts and drum - card materials - reference texts - multimedia resources and equipment.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	— onomatopoeia — imagery — irony 09 Listen to, read and perform poetry 10 Explore concepts of form, rhythm and rhyme in poetry 11 Explore types and parts of still and moving images used in literary texts, including: — elements of images and their composition — use of size, shape and colour — links between words and images 12 Explore the work of still and moving images in literary texts	
2.LA.110 Reading and viewing factual texts	01 Read a wide range of factual texts for enjoyment and information, both print-based and multimedia texts 02 Identify and understand parts of a factual text: — title — author — table of contents/menu — text — illustrations, diagrams and tables — index — bibliography 03 Use reading and/or viewing skills to: — identify main ideas in a text — find specific information in a text — evaluate a factual text 04 Identify and evaluate persuasive texts 05 Use factual texts when researching topics of interest 06 Progress to increasingly complex reading tasks	Activities include: - going out e.g., to libraries, bookshops, museums, newspaper offices, radio/television stations, advertising agencies - guided small group reading activities - visits by authors of factual texts, journalists, advertising copy writers, web and CD designers - research projects. Resources include: - quality non-fiction/factual texts in a range of media e.g., books, newspapers, magazines, multimedia CDs, websites, video, television - pictures, card material and booklets from all curriculum areas e.g., geometry, geography, biology, history - simple persuasive texts e.g., newspaper opinion pieces, letters to the editor, reviews, advertising - reference texts.
2.LA.120 Writing: composing literary and factual texts	01 Recognise and explore a variety of literary texts in a variety of forms, including: — prose and poetry — text, images, multimedia — paper-based, digital and web-based 02 Recognise the purpose and parts of a range of literary text types: — literary description	Activities include: - guided individual and small group exercises - guided composition activities e.g., composing literary texts scaffolded by an adult or peer using the written question game - identifying purpose and stages of literary texts - sequencing and sorting jumbled literary texts

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	— literary recount — narrative — personal response/review 03 Explore and experiment with grammar patterns and writing styles used in a variety of literary text types 04 Explore a variety of poetic forms 05 Compose texts to achieve a range of literary and creative purposes using a range of textual forms (prose, poetry, illustrated texts, multimedia, digital) 06 Compose and present written literary texts using the writing process: — planning/outlining — drafting — editing — proofreading — publishing	- using knowledge of grammar and grammar symbols to find grammar patterns typical of different types of literary texts - modelling 'how to' compose different types of literary texts - guided and independent creative writing projects - conferencing with peers and teacher - choosing most effective text type for creative writing projects - using library and Internet to research ideas and models for creative writing - writing creatively for classroom and school publications, for example photobooks of student poetry accompanied by student illustrations or photographs - writing reviews of literary texts, and other creative works. Resources include: - range of literary texts to use as models for creative writing - card material - poetry cards - box of grammar symbols - variety of media: writing implements, paper, art materials, digital camera, materials for making books, word processing, multimedia and web authoring programs, mind-mapping software
	07 Recognise and explore a variety of factual texts in a variety of forms, including: — prose, letter-writing, images, diagrams, tables, flow charts, multimedia — paper-based, digital and web-based 08 Recognise the purpose and parts of a range of factual text types: — procedure/instructing — factual description — factual recount — information report/organising information — explanation — persuasive texts 09 Explore and experiment with grammar patterns and writing styles for different factual text types 10 Compose factual texts to achieve a range of purposes using a range of textual forms (letter, list, text, diagram,	Activities include: - guided individual/small group exercises - guided composition activities e.g., composing factual texts scaffolded by an adult or peer using the written question game - identifying purpose/stages of factual texts - sequencing/sorting jumbled factual texts - using knowledge of grammar and grammar symbols to find grammar patterns typical of factual texts - modelling 'how to' compose factual texts - guided and independent factual writing projects - conferencing with peers and teacher - choosing most effective text type for project work in all areas of the curriculum - using library and Internet to research information for factual writing - summarising and note-taking exercises (e.g., using graphic organisers, including mind-mapping software) in preparation to write factual texts - classroom and school publications - writing letters e.g., to family, penfriends, school executive, local media.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	table, flowchart, illustrated texts, multimedia, digital) 11 Compose and present written factual texts using the writing process: – planning/outlining – drafting – editing – proofreading – publishing	Resources include: - range of factual texts to use as models for writing - card material - box of grammar symbols - variety of media (writing implements, paper, art materials, digital camera, materials for making books, word processing, multimedia and web authoring programs, mind-mapping software).
	12 Recognise paragraphs in a text 13 Understand the purpose and structure of a paragraph 14 Begin to use paragraphs in own written work 15 Use a flow of related paragraphs to compose texts 16 Recognise, differentiate between and compose groups, phrases, clauses and sentences 17 Redraft and reorganise the parts of a sentence to enhance clarity and effectiveness 18 Choose words for effect and meaning 19 Use literary language, technical terms and abstract vocabulary	Activities include: - composing paragraphs, sentences and parts of sentences with moveable alphabets - modelled, guided and independent writing exercises and activities - writes groups, phrases and sentences - style analysis with grammar symbols and/or sentence analysis materials - independent writing projects - conferencing with peers and teacher - vocabulary building exercises from across the curriculum. Resources include: - moveable alphabets - grammar boxes and command cards - box of grammar symbols - sentence analysis materials - classified pictures, card material and booklets from all areas of the curriculum - dictionary and thesaurus - model literary and factual texts - reference texts.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.LA.130 Writing: handwriting and keyboarding	01 Use manipulable letters to compose words and short texts, noting orientation of each letter and spaces between words 02 Refine/develop fine motor skills required for cursive writing 03 Use correct pencil grip and posture for handwriting 04 Refine cursive handwriting skills: – letter formation – directionality – slope – starting and finishing points – joins – placement online 05 Experiment with and appreciate a variety of writing implements and writing media 06 Develop refinement and precision of letter formation 07 Experiment with a variety of writing styles and experience handwriting as an art form 08 Use handwriting in everyday tasks 09 Prepare handwritten presentations of creative writing and project work	Activities include: - composing words, groups, phrases, sentences and short compositions with moveable alphabet - art and craft e.g., painting, drawing, cutting, tracing, knitting, sewing, clay/wax work - design and illustration work in all areas of the curriculum - guided individual and small group activities - writing in a variety of media e.g., in sand and the air, with chalk, felt pen, variety of pencils, brush, quill - writing exercises with historical or novel alphabets - using handwriting to present completed work - using calligraphy and illumination e.g., to present favourite poems, prepare greeting cards, decorate project work - grace and courtesy, going out and research activities e.g., writing messages, letters and invitations, thank you notes, note-taking. Resources include: - moveable alphabets - metal insets and other materials for design - wall charts - chalk and chalkboards - whiteboards - variety of pencils, brushes and quills - calligraphy materials - variety of papers with different types of lines.
	10 Become familiar with the keyboard and its features 11 Build basic knowledge of safe computer use: – seating and posture – distance between eyes and screen – limiting screen time – school ICT code of conduct – safe use of the Internet (e.g., maintaining anonymity) 12 Develop basic skills with computer mouse 13 Develop typing skills 14 Use word processing, when appropriate, to present completed work 15 Use digital technology, when appropriate, for communication,	Activities include: - guided presentations and individual practice - research projects - taking photos of excursions to post online for parents to view - recording audiobooks using voice recording / editing software such as Audacity or Voice Memo apps; audiobook files are synced with a class iPod which is used by emergent readers to listen to and follow along in texts as their peers read to them in the audiobook - setting up online accounts with anonymous passwords - communicating with digital pen pals in classrooms overseas; sending letters as attachments; arranging Zoom or Hangout calls - using digital microscope to capture images for science projects Resources include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	record-keeping, creative writing and project work	- computer station designed for student use or mobile laptops stored in a powered cart - age-appropriate touch-typing programs (e.g., *Type to Learn* by Sunburst Communications) - computer programs to introduce students to word processing, desktop publishing, spreadsheets, email, multimedia authoring, website design - digital camera - digital microscope - headphones.
2.LA.140 Writing: spelling	01 Review sound-letter correspondence 02 Review blends, *phonograms* (digraphs) and *puzzle* (sight) *words* 03 Experience and begin to apply a variety of spelling strategies: – sounding out – identifying consonant and vowel patterns – identifying onset and rime – syllabification – visualization – etymology – spelling patterns – association with known words 04 Use a dictionary or technology to confirm spelling 05 Experience and begin to apply common spelling rules or patterns	Activities include: - writing words with moveable alphabet - tracing words - creating words in clay or similar media - writing labels for objects in classroom environment - writing word families - highlighting spelling patterns using small moveable alphabets in different colours - phonogram and puzzle word lessons and exercises - word study exercises - working with and researching words containing blends and phonograms - working with and researching puzzle words - maintaining a personal spelling dictionary - lessons and exercises introducing use of dictionary, spell-check and online dictionaries - providing students with the etymology of each technical or specialised term introduced in all areas of the curriculum - practice activities as needed to reinforce spelling e.g., look-say-cover-write, quizzes. Resources include: - moveable alphabets - phonogram cards and booklets - puzzle word lists, booklets and folders - spelling lists, charts, booklets and cards - student's own dictionary - paper-based and online dictionaries covering a range of reading levels - thesaurus.
2.LA.150 Writing: Punctuation	01 Understand the purpose and use of punctuation marks: – full stop – comma – question mark – exclamation mark – colon and semi-colon	Activities include: - introductory games to establish function of punctuation e.g., reading a paragraph without taking a breath - introductory games to learn formation of punctuation marks e.g., modelling punctuation

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	— quotation marks — hyphen and dash 02 Understand the purpose and use of capitalisation 03 Develop use of correct punctuation in written work 04 Proofread and edit written texts, using feedback to improve written work	marks in a variety of media including body sculpture, clay and artwork - guided individual and small group games and exercises - looking for punctuation marks in a variety of texts - guided exercises in drafting, editing and proofreading - conferencing with peers and teacher - stories and research projects to explore the history of individual punctuation marks. Resources include: - card material - capitalization charts - noun classification charts (proper/common) - student's own texts - texts matched to interest displaying a variety of punctuation use - research materials (paper-based, digital, web-based).

Language Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.LA.010 History of language	01 Gain further knowledge of the development of spoken language 02 Communicate using a variety of means used in the history of written language 03 Gain further knowledge about the development of the alphabet 04 Gain further knowledge of the development of written language, from its beginnings to the present 05 Enhance knowledge of the development of English	Activities include: - story of communication in signs (2nd level) - factual stories and historical accounts - experimenting with pictures, pictograms, hieroglyphs, ancient alphabets to communicate - research projects e.g., making models, timelines and charts - note-taking and writing up research. Resources include: - charts and artefacts - research materials (paper-based, digital, web-based, multimedia).
3.LA.020 Spoken language: listening and speaking	01 Enhance skills in listening and responding to: — stories and poems read aloud or performed — recordings or performances of songs, music, plays — video and film screenings — spoken and multimedia presentations — note-taking 02 Enhance skills in spoken interaction:	Activities include: - grace and courtesy 'how to' lessons/role plays - daily interactions with teachers and peers - preparation for going out - collaborative research projects - class meetings - listening comprehension activities - guided speaking activities - guided note-taking - choral and individual performances - presentations, plays and speeches

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– greetings and leave-takings – requests and offers – asking and responding to questions – giving and following instructions, including multi-step instructions – using questions to build and clarify understanding – initiating topics – expressing opinions – using intonation, gesture and eye contact – relating events, stories or conversations – using different forms of speech for different purposes and audiences – using the telephone to gain information – conducting interviews – using active listening skills – listening for key ideas and for detail – participating in discussions and debates – arguing for a point of view – questioning or challenging a point of view – explaining complex concepts Enhance performance skills: – reading aloud – rhythm and movement in speech – reading and performing rhymes, poetry and songs – spoken and multimedia presentations, reports and speeches – voice production – improvising and acting out dramatic roles – use dialogue in dramatic performance	- interviews, discussions, debates, mock trials, mock parliament - guest speakers. Resources include: - grammar boxes commands - interpretive reading cards - command cards in all areas of the curriculum - card material - exemplary speeches from history - student's own work - quality children's literature and factual texts in a variety of forms (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.LA.030 Reading: word and text level (basic skills)	01 Competently read words containing blends and phonograms (digraphs) 02 Competently read puzzle words (sight words with irregular spelling) 03 Competently decode and comprehend words, word groups, phrases, clauses and sentences	Activities include: - small group lessons and exercises to review knowledge and skills as needed - individual tutorials for students needing to review and practise basic skills - extension of word study exercises - drama and visual arts activities based on reading - reading comprehension exercises in all areas of the curriculum. Resources include: - phonogram folders, cards, booklets and word lists - puzzle word lists, booklets and folders - pictures, labels, jumbled text and booklets in all areas of the curriculum - command cards in all curriculum areas - reading commands - interpretive reading cards.
	04 Develop, consolidate and extend reading skills and strategies, including: — navigating and understanding the structure of written and multimodal texts — predicting the meanings in a text — skimming a text for the main ideas — scanning a text for detailed information — reading for inferred and/or implied meanings — recognising how a text shapes opinions and point of view	Activities include: - exercises to build a range of reading skills and strategies e.g., library activities, modelled and guided reading activities, research projects - interpreting the meanings in texts in a variety of ways e.g., written and spoken responses, drama and visual arts - expanding reading repertoire as interest, fluency and comprehension develops. Resources include literary and factual reading material matched to interest and curriculum focus.
	05 Read a range of texts fluently with expanding levels of comprehension 06 Extend reading for enjoyment 07 Extend reading for research	Activities include: - modelled, guided and independent reading of factual and literary texts individually and in small groups - interpreting literary texts through drama, creative arts and model-making activities - taking notes, using graphic organisers, drawing maps and diagrams and building models from factual texts - library visits - guided reading for research - reading own and peers' writing for editing, proofreading and conferencing - reading as performance. Resources include quality reading material (literary and factual; paper-based, digital and web-based) matched to interest.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.LA.040 Word study	01 Review and extend knowledge of words and their parts: – word bases – prefixes – suffixes 02 Review and extend knowledge of synonyms, antonyms and homonyms 03 Use study of etymology to explore: – origins of words – word families – changes in usage over time 04 Review and extend knowledge of figures of speech: – simile and metaphor – personification – onomatopoeia – alliteration and assonance 05 Expand and enhance vocabulary for reading and writing both literary and factual texts	Activities include: - word study reviews, exercises and extensions - spelling exercises and extension - style study of student's own writing and the writing of others - etymology lessons/research for all technical and specialised words introduced in the curriculum - vocabulary research projects - building word banks. Resources include: - word study charts and card material - small moveable alphabets in different colours - card sets, wall charts - dictionaries and thesaurus (paper-based and online) - etymological dictionaries (paper-based, digital and/or web-based) - research and reference materials - box of grammar symbols.
3.LA.050 Grammar study for reading fluency: functions of words and grammar boxes	01 Complete, review and extend study of word functions and grammar patterns initiated in language curriculum for children aged from six to nine	Activities include: - spoken language stories, lessons and games - *grammar box* reading games, commands and experiments: dramatising the work of grammatical structures, composing word groups and sentences with colour-coded cards, symbolising cards to reveal grammar patterns - *transposition* exercises to explore and experiment with word order - laying out sets of cards in tables and arrays to explore the classification of grammar categories - working with charts to identify grammar patterns - writing activities to record work. Resources include: - *grammar boxes* containing cards with target text, loose colour-coded cards for composing, commands, classified card sets - supplementary card material and games to explore function, agreement and classification - 3-D grammar symbols (geometric solids) - boxes of 2-D grammar symbols (plane geometric shapes) - charts to guide analysis - dictionaries.
3.LA.060	01 Complete, review and extend detailed study of the verb initiated in language	Activities include: - spoken language lessons and games

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Grammar study: detailed study of the verb	curriculum for children aged from six to nine	- writing activities to record work - comparing use of English grammar patterns with the corresponding grammar patterns of a LOTE - research projects. Resources include: - charts and card material - sentence analysis materials - boxes of grammar symbols - reading and reference material (paper-based, digital and/or web-based).
3.LA.070 Grammar study for reading and writing fluency: sentence analysis (simple, compound, complex sentences)	01 Complete, review and extend *sentence analysis* work initiated in language curriculum for children aged from six to nine 02 Use knowledge of simple sentences in writing tasks (creative writing and project work) 03 Identify compound sentences and break into parts 04 Identify coordinating conjunctions in compound sentences 05 Identify complex sentences and break into parts 06 Identify relative pronouns in complex sentences 07 Identify subordinating and correlative conjunctions in complex sentences 08 Recognise different types of conjunction (addition, time sequence, cause and condition, comparison) 09 Analyse compound and complex sentences 10 Use knowledge of compound and complex sentences in writing tasks (creative writing and project work)	Activities include: - sentence analysis lessons - sentence reading and analysis exercises tearing sentences written on strips of paper into parts and labelling and setting out sentence structure with wooden material - recording analysis use sentence analysis paper - sentence writing activities using chart A as a guide to compose short and long simple, compound and complex sentences - composing short and long simple, compound and complex sentences abstractly - creative writing and research tasks. Resources include: - sample simple, compound and complex sentences derived from student writing and student reading material, both literary and factual texts - sentence analysis Boxes 1 and 2 (wooden circles, arrows, triangles) - sentence analysis chart A - sentence analysis paper - reading material to find sentences to analyse - card material - word banks of coordinating and subordinating conjunctions.
3.LA.080 Grammar study for reading and writing fluency: sentence analysis (types of clauses)	01 Identify clauses in compound sentences (independent clauses) 02 Identify clauses in complex sentences and label according to dependency – independent clause – dependent clause 03 Identify clauses in complex sentences and label according to type:	Activities include: - sentence analysis lessons - sentence reading and analysis exercises tearing sentences written on strips of paper into parts and labelling and setting out sentence structure with wooden material - recording analysis use sentence analysis paper - sentence writing activities, with material and abstractly

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– main/principal clause – adjectival clauses – adverbial clauses – noun clauses used as subject, object or indirect object	- creative writing and research tasks Resources include: - *clause* analysis boxes 1 and 2 - sentence analysis chart B - card material
3.LA.090 Grammar study for writing: study of style	01 Complete, review and extend *study of style* initiated in language curriculum for children aged from six to nine 02 Use grammar symbols to analyse and recognise own writing style 03 Use knowledge of grammar to expand and enrich personal writing style 04 Develop and enrich vocabulary 05 Use analysis, symbolising and transposition of grammar patterns in sentences and texts as the basis for discussion of meaning-making and how meanings might be amplified and enhanced 06 Use analysis, symbolising and transposition of grammar patterns in sentences and texts written by the same author to investigate the author's style	Activities include: - guided individual and small group activities - brainstorming in small groups - building word webs and mind maps. Resources include: - box of grammar symbols - sample word webs and mind maps - grammar boxes II-IX - sentence analysis boxes 1 and 2 - sentence analysis charts.
3.LA.100 Reading and viewing literary texts	01 Review and extend reading and viewing of literary texts initiated in language curriculum for children aged from six to nine 02 Select extracts of familiar literature to analyse and critique author's style 03 Review a range of literary texts (prose, poetry, picture books, drama, film, multimedia texts, e-literature) and support opinions using evidence from the text 04 Research and discuss historical background of selected literary texts 05 Explore and discuss how individuals and groups of people are represented in a range of literary texts and literary genres 06 Analyse and critique a selection of poems for form, rhythm and rhyme 07 Research figures of speech used in literary texts:	Activities include: - *going out* e.g., bookshops, libraries, literary events - guided small-group activities - reading, analysing and discussing literary texts in small groups - research projects e.g., creating literary timelines, researching different types of figures of speech to create charts or booklets, researching authors - writing and publishing reviews - literary projects e.g., preparing an anthology of favourite poems or poetry or prose extracts for performance - model-making based on setting or characters, preparing multi-media presentations based on literary texts; designing illustrations for favourite literary texts - Book Week activities and author visits. Resources include: - children's literature, both prose and poetry, including picture books and multimedia texts - student writing - box of grammar symbols

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– idiom – simile and metaphor – personification – alliteration and assonance – onomatopoeia – imagery – irony, hyperbole and paradox	- form and rhyme charts, metre charts, drum - card material - reading and reference material (paper-based, digital and/or web-based) - visual arts resources - multimedia authoring resources.
3.LA.110 Reading and viewing factual texts	01 Review and extend reading and viewing of factual texts initiated in language curriculum for children aged from six to nine 02 Read factual descriptions, information reports and explanations in order to complete research tasks 03 Recognise point of view in persuasive texts (review, exposition, discussion, advertisements) 04 Evaluate evidence and quality of the argument in persuasive texts 05 Understand the production of media texts (news stories, feature articles, opinion pieces, letters to the editor) 06 Explore and discuss degrees of objectivity in media texts 07 Develop a critical orientation to factual texts 08 Extend and enhance research skills	Activities include: - going out e.g., to libraries, bookshops, museums, newspaper offices, radio/television stations, advertising agencies - guided small group reading activities - visits by authors of factual texts, journalists, advertising copy writers, web and CD designers - using factual texts in research tasks - activities that build media literacy, including activities that build an informed and critical response to advertising - summarising and note-taking - using graphic organisers and diagrams to record and organise key points and details - evaluating the quality of facts, evidence and/or reasoning used by authors of a variety of factual texts. Resources include: - non-fiction/factual texts in a range of media e.g., books, newspapers, journals, multimedia CDs, websites, video, television - student writing - pictures, card material and booklets from all curriculum areas e.g., geometry, geography, biology, history - range of persuasive texts e.g., opinion pieces, letters to the editor, reviews, advertising, political speeches.
3.LA.120 Writing: composing literary and factual texts	01 Review and extend composing of literary and factual texts initiated in language curriculum for children aged from six to nine 02 Expand repertoire of text types and media used in written composition of both creative, literary texts and factual texts 03 Compose texts that achieve complex purposes by combining the features of two or more text types	Activities include: - guided individual and small group exercises - guided composition activities e.g., composing literary and factual texts scaffolded by an adult or peer using the written question game - identifying purpose and stages of texts - sequencing and sorting jumbled texts - summarising and note-taking exercises - using knowledge of grammar and grammar symbols to find grammar patterns typical of different types of texts - modelled, guided and independent writing projects - conferencing with peers and teacher

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	04 Use knowledge of text types, grammar patterns and style in innovative and creative ways in own writing 05 Use knowledge of poetry and poetic devices in innovative and creative ways in own poetry 06 Adapt and adjust the writing process to a range of writing contexts	- selecting and adapting text types, grammar patterns and writing style for creative writing and project work in all areas of the curriculum - using library and Internet - classroom and school publications, for example photobooks of student poetry accompanied by student illustrations or photographs Resources include: - range of literary and factual texts to use as models for writing - card material - poetry cards - box of grammar symbols - variety of media (writing implements, paper, art materials, digital camera, materials for making books, word processing, multimedia and web authoring programs).
	07 Review and extend knowledge of paragraph and sentence writing initiated in language curriculum for children aged from six to nine 08 Recognise the parts of a paragraph – topic sentence – body – concluding sentence 09 Extend paragraph-writing ability 10 Link paragraphs to compose texts 11 Extend ability to craft groups, phrases, clauses and sentences 12 Extend ability to redraft and reorganise the parts of a sentence to enhance clarity and effectiveness 13 Extend ability to select vocabulary for effect and meaning 14 Extend use of literary language, technical terms and abstract vocabulary to correspond with progress through curriculum	Activities include: - modelled, guided and independent writing exercises and activities - style analysis of a variety of texts using grammar symbols and/or sentence analysis materials - independent writing projects - conferencing with peers and teacher - vocabulary enrichment exercises across the curriculum. Resources include: - grammar boxes and command cards - box of grammar symbols - sentence analysis materials - classified pictures, card material and booklets from all areas of the curriculum - dictionary and thesaurus - model literary and factual texts - reference material (paper-based, digital and/or web-based).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.LA.130 Writing: handwriting and keyboarding	01 Extend and enhance cursive handwriting skill developed from six to nine years 02 Refine cursive handwriting and develop personal handwriting style, noting letter formation and directionality, slope, starting and finishing points, joins and placement 03 Expand repertoire of writing implements and writing media 04 Experiment with a variety of writing styles and experience handwriting as an art form 05 Use handwriting in everyday tasks 06 Prepare handwritten presentations of creative writing and project work	Activities include: - small group lessons and exercises to review knowledge and skills as needed - individual tutorials for students needing to review and practise basic skills - design and illustration work in all areas of the curriculum - guided individual and small group activities - writing with a variety of implements (pencils, pens, brush, quill, chalk, crayon, charcoal), colours and media (inks, paint, colours, a variety of papers and surfaces) - writing exercises with historical or novel alphabets - using handwriting to present completed work - using calligraphy and illumination e.g., to present favourite poems, prepare greeting cards, decorate project work - grace and courtesy, going out and research activities e.g., writing messages, letters and invitations, thank you notes, note-taking Resources include: - materials for design - variety of writing implements and writing media - calligraphy materials - variety of papers with different types of lines
	07 Use computer equipment comfortably and safely 08 Enhance touch typing skills and expertise 09 Extend knowledge of safe computer use: — seating and posture — distance between eyes and screen — limiting screen time — media literacy instruction (i.e. how to critically evaluate online messages and websites) 10 Advanced Boolean search functions in Google or other browsers 11 Discuss and contribute to school ICT code of conduct and responsible use of the Internet 12 Use word processing, when appropriate, to present completed work	Activities include: - guided presentations and individual practice - individual tutorials for students needing to review and practise basic skills - research projects - discussions - taking photos of excursions to post online for parents to view - recording audiobooks using voice recording / editing software such as Audacity or Voice Memo apps; audiobook files are synced with a class iPod which is used by emergent readers to listen to and follow along in texts as their peers read to them in the audiobook. - communicating with digital pen pals in classrooms overseas; sending letters as attachments; arranging Zoom or Hangout calls - using collaborative software to publish school magazine or yearbook or complete other collaborative projects - students maintain classroom social media platform for parental information and student

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	13 Use digital technology, when appropriate, for communication, record-keeping, creative writing, video production, and project work	communication, with emphasis on agreed conventions and appropriate use - using digital microscope to capture images for science projects - producing short video public service announcements (PSAs) - creating digital stories by blending still images, narrative voiceovers and background music into a 3-minute video - critical viewing of the Netflix video The Social Dilemma Resources include: - computer station designed for student use or mobile laptops - age-appropriate touch typing programs (e.g., *Type to Learn* by Sunburst Communications) - computer programs for word processing, desktop publishing, creating spreadsheets, email, multimedia authoring, website design - digital camera - digital microscope - headphones
3.LA.140 Writing: spelling	01 Consolidate and extend spelling knowledge and skill initiated in language curriculum for children aged from six to nine 02 Spell accurately words containing blends and phonograms (digraphs) 03 Consolidate and extend knowledge of puzzle words (sight words and words with irregular spellings) 04 Consolidate and extend knowledge of spelling strategies: — sounding out — identifying consonant and vowel patterns — identifying onset and rime — syllabification — visualization — etymology — spelling patterns — association with known words 05 Consolidate and extend knowledge of spelling rules or patterns 06 Apply knowledge of spelling rules and patterns in written work	Activities include: - individual tutorials for students needing to review and practise basic skills - blend, phonogram and puzzle word review and practice as needed - working with and researching words containing blends and phonograms - working with and researching puzzle words - word study exercises - maintaining a personal spelling dictionary - using dictionary, electronic spell-check and online dictionaries - discussing and researching the etymology of each technical or specialised term introduced in all areas of the curriculum - discussing and experimenting with unconventional spelling used in email and messaging, while contrasting it with spelling conventions used in more formal writing Resources include: - spelling lists, charts, booklets and cards - word study charts and card sets - card material in all curriculum areas - student's own dictionary - paper-based, digital and online dictionaries, thesaurus and etymological dictionary - reading and reference material (paper-based, digital and/or web-based)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	07 Apply knowledge of word parts, grammar and etymology to the spelling of words in written work 08 Spell technical and specialised words with increasing accuracy 09 Use a dictionary or technology to confirm or research spelling 10 10 Compare the use of spelling in messaging and emails with its use in the writing of more formal literary and factual texts	
3.LA.150 Writing: Punctuation	01 Consolidate and extend knowledge of punctuation initiated in language curriculum for children aged from six to nine 02 Use punctuation with increasing accuracy and skill in written work 03 Proofread and edit written texts, using feedback to improve written work 04 Research the history, development and purpose of punctuation in English 05 Compare and discuss the use of punctuation in messaging and emails with its use in the writing of more formal literary and factual texts	Activities include: - modelled, guided and independent individual and small group exercises and writing tasks - guided exercises in drafting, editing and proofreading - conferencing with peers and teacher - research projects and discussions Resources include: - card material - capitalisation charts - noun classification charts (proper/common) - student texts - a range of texts displaying a variety of punctuation use - reference materials

Mathematics

Overview

The *Children's House* provides children with a strong foundation on which to build the more advanced mathematical understandings they gain in Montessori environments prepared for children over the age of six. In the *Children's House* children work with a variety of concrete materials embodying mathematical concepts. When the hand and the mind work together, young children are able to absorb concepts, sometimes without the need for words.

Each Montessori mathematics lesson, in both the *Children's House* and in environments prepared for children over six, has two aims, one indirect and one direct. The *direct aim* is the immediate purpose that is obvious when the concrete materials are presented to the children. The *indirect aim*, often a more abstract aim, is achieved when children work with the concrete materials independently. The indirect aim prepares children for more advanced concepts they will meet later in the curriculum. In the Montessori view, when children work first with concrete materials and move at their own pace toward abstraction with paper and pencil, or towards mental arithmetic, they internalise concepts at a deeper, more lasting level than if they had memorised them by rote.

Beyond the age of six children continue to learn mathematical principles through the manipulation of concrete materials but they do not want to be tied to concrete materials and strive towards the freedom of working at the abstract level. The concrete materials become stepping-stones only, keys to open the door to abstraction whenever a child is ready. By generalising from their experience with the concrete materials, children over the age of six are able to work out mathematical formulae and definitions for themselves. Montessori teachers do not offer help too early but wait until children have had a chance to work with a problem and come up with a few solutions for themselves. Children also encounter problems to use in their independent work in the form of command cards prepared for all areas of the mathematics curriculum.

In the study of mathematics at this age children use quantities with precision. They also reason using logic and abstract patterning based on observation and imagination. Children work with measurements, patterns, sequences and mathematical relationships, applying these concepts to practical projects. They learn that the creative potential of mathematics is as great as its potential to order and to provide understanding. In the Montessori view, constructing a 'mathematical mind' in this way is the birthright of all children.

The Montessori mathematics curriculum extends children aged from six to twelve further than is normally expected of children at this age and stage. For example, from the age of six children, explore and practise operations with the culture's system of numeration, the decimal system. Once children have mastered this system, usually by the age of nine, they are ready to examine other number systems, with bases other than ten, from both a mathematical and an historical perspective. Children may even perform operations in number systems with bases other than ten. Extension activities of this type allow children to exercise their mental capacities as well as consolidate and reinforce their existing understanding.

As children progress through the Montessori mathematics curriculum, they learn to make connections between concepts. For example, they learn to apply compound multiplication to fractions and decimals, or progress from the four operations of addition, subtraction, multiplication and division to squaring and cubing, and to solving square roots and cube roots.

Mathematics Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.MA.010 History of mathematics	01 Listen to and read stories about the history of numbers and mathematics 02 Research ancient number systems – Aboriginal and Torres Strait Islander peoples – Babylonian – Egyptian – Mayan – Chinese – Hindu-Arabic – Roman 03 Explore the history of the number system used in our culture: the *decimal system*	Activities include: - great lesson: the story of numbers - independent research - creating charts, models and timelines - counting and calculating using earlier number systems eg Roman numerals. Resources include: - charts, card material and artefacts - research and reference materials (paper-based, digital, web-based, multimedia).
2.MA.020 Numbers to ten (link with *Children's House* curriculum)	01 Introduce, consolidate and/or review knowledge of numbers to ten 02 Recognise odd and even numbers	Activities include: - individual and small group lessons and exercises to introduce, consolidate and/or review and assess knowledge of quantities and symbols as needed - individual tutorials for students needing to review and practise basic knowledge - memory game of numbers - odds and evens lesson. Resources include: - concrete material and corresponding symbols, including number rods (1-10), spindle boxes (0-9), number cards and counters (1-10), stair of colour-coded bead bars (1-10), snake game - basket with numbers (0-10) written on separate paper squares folded to hide the number.
2.MA.030 Counting (link with *Children's House* curriculum)	01 Introduce, consolidate and/or review counting 11-20 02 Introduce, consolidate and/or review counting 1-100 03 Introduce, consolidate and/or review counting 1-1000	Activities include: - individual and small group lessons and exercises to introduce, consolidate and/or review and assess counting knowledge and skills - individual tutorials for students needing to review and practise basic skills - using concrete material to count in a variety of ways within the range of 1-1000. Resources include: - teen boards and colour-coded bead bars - ten boards and colour-coded bead bars - golden 100-chain (102) and number labels (multiples of 10) colour-coded to indicate hierarchies

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- golden1000-chain (103) and number labels (multiples of 10) colour-coded to indicate hierarchies - short colour-coded skip counting chains (12 - 92) with number labels for multiples - long colour-coded skip counting chains (13 - 93) with number labels for multiples.
Study of the decimal system		
2.MA.040 The decimal system: introduction	01 Introduce, consolidate and/or review the formation of concrete quantities (bead material) representing units, tens, hundreds and thousands 02 Introduce, consolidate and/or review the formation of numerals to 4-digits using manipulable, colour-coded cards representing units, tens, hundreds and thousands 03 Associate concrete quantities (bead material) with symbols (numerals on cards) 04 Explore place value using zero as a place holder to build numerals to four digits using manipulable colour-coded number cards 05 Exchange 10 of each hierarchy for one of the next hierarchy using concrete quantities (bead material) 06 Expanding numbers to 4-digits with colour-coded number cards	Activities include: - demonstrations of the hierarchies of the decimal system (units, tens, hundreds, thousands) with golden bead material - counting the zeroes on the colour-coded number cards to identify hierarchies - building arrays of beads and cards - forming numbers using concrete quantities - forming numbers with number cards (hiding zeroes) - playing the change game with golden bead material and colour-coded number cards - expanding numbers using colour-coded number cards Resources include: - golden bead material - colour-coded numerals on cards.
2.MA.050 The decimal system: operations with whole numbers	01 Introduce, consolidate and/or review concepts and processes of addition and subtraction 02 Use vocabulary for talking about the parts of an addition: *first addend, second addend, sum* 03 Use vocabulary for talking about the parts of a subtraction: *minuend, subtrahend, difference* 04 Use concrete quantities to add and subtract 4-digit numbers, first without and later with exchanging 05 Notate addition and subtraction problems to four digits both horizontally and vertically	Activities include: - games and activities with concrete materials to introduce the concepts of addition and subtraction - using concrete material to add and subtract, with accompanying notation - calculation using addition and subtraction, progressing from concrete representation accompanied by notation (golden bead material) to more abstract representation (stamp game, dot game), and from calculation without exchanging to calculation with exchanging, including calculation involving zeroes - completing problems on command cards and/or creating own problems

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- activities to build familiarity with graphic representations of addition and subtraction e.g., number lines. Resources include: - *golden bead* material, colour-coded numerals on cards and notation paper with colour-coded numerals - *stamp game* and notation paper with colour-coded lines - *dot game* board and/or paper - command cards.
	06 Introduce, consolidate and/or review concept and process of multiplication as repeated addition of the same number 07 Use vocabulary for talking about the parts of a multiplication: *multiplicand, multiplier, product* 08 Use concrete quantities to multiply 4-digit numbers by a 1-digit (unit) multiplier, first without and later with exchanging 09 Notate multiplication calculations (multiplicand to four digits and 1-digit multiplier) both horizontally and vertically	Activities include: - games and activities with concrete materials to introduce the concept of multiplication as repeated addition of the same number - using concrete material to multiply with accompanying notation - multiplication calculation progressing from concrete representation accompanied by notation (golden bead material) to more abstract representation (stamp game), and from calculation without exchanging to calculation with exchanging, including calculation involving zeroes in multiplicand - activities to build familiarity with geometric representation of multiplication. Resources include: - *golden bead* material, colour-coded numerals on cards and notation paper with colour-coded numerals - *stamp game* and notation paper - command cards.
	10 Introduce, consolidate and/or review concept and process of division as sharing equally (distributive division) 11 Use vocabulary for talking about the parts of a division: *dividend, divisor, quotient* 12 Use concrete material to divide 4-digit numbers by a 1-digit (unit) divisor, first without and later with exchanging 13 Notate division calculations (dividend to four digits and 1-digit divisor) both horizontally and vertically 14 Introduce, consolidate and/or review the concept and process of distributive division with 2- and 3-digit divisors	Activities include: - games and activities with concrete materials to introduce the concept of division as sharing equally (from highest hierarchy) - using concrete material to divide with accompanying notation - division calculation progressing from concrete representation accompanied by notation (golden bead material) to more abstract representation (stamp game), and from calculation without exchanging to calculation with exchanging, including calculation involving zeroes in dividend - early games and exploration in calculating division with 2- and 3-digit divisors using concrete material (golden bead material and colour-coded ribbons; stamp game with skittles), including calculation with zeroes in the

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	15 Introduce and explore the concept and process of group division with 1-digit, 2-digit and 3-digit divisors 16 Notate division calculations with dividend to four digits and 2-digit and 3-digit divisors horizontally	divisor (stamp game with skittles and counters) and group division - completing problems on command cards and/or creating own problems (progressing from concrete representation accompanied by notation to increasingly abstract representation) - verifying answers. Resources include: - golden bead material and notation paper with colour-coded numerals - colour-coded ribbons - stamp game, colour-coded skittles and notation paper - command cards.
2.MA.060 Inter-relationships between operations	01 Explore inverse relationships of addition and subtraction 02 Explore inverse relationships of multiplication and division	Activities include: - using concrete materials to explore inverse relationships of addition subtraction - using concrete materials to explore inverse relationships of multiplication and division - using inverse relationships to verify answers. Resources include: - golden bead material - stamp game - bead frames and notation paper.
Memorisation		
C2MG070 Memorisation: addition facts	01 Explore and record all essential addition facts for sums from 2-18 using concrete material 02 Explore and record all addition facts with zero as an addend for sums from 1-18 using concrete material 03 Explore and record the doubles of numbers 1-9 using concrete material 04 Memorise essential addition facts for sums to 18 using finger charts 05 Use knowledge of addition facts to solve word problems 06 Find equivalent combinations using concrete material (commutative law) 07 Prepare for mental calculation of addition combinations (sums to 99) using concrete material: – sums < 10 – sums > 10 – addends > 10	Activities include: - activities and games with concrete material (addition strip board) to research addition facts for sums to 18 - recording sums in prepared tables - games with addition combinations on loose cards and finger charts to develop memorisation of addition facts - games with strip board in which all the ways to make each sum to 18 are researched and recorded - games with concrete material and charts in which the order of the addends is changed and equivalent (turn around) combinations are substituted (commutative law) - solving additions (sums to 18) with different unknowns (first addend, second addend or sum) - games with bead material and manipulable symbols (addition signs, equal signs) to prepare progressively for mental addition of addends to at least 2-digits (sums to 99)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– more than 2 addends 08 Form and solve addition combinations with brackets using colour-coded bead bars and manipulable brackets, addition and equal signs (associative law)	- games with bead material and manipulable symbols (brackets, addition signs, equal signs) to form and solve additions and to expand addends (commutative and associative laws) - recording and verifying answers in all games and activities - solving word problems using knowledge of addition facts - follow-up activities to reinforce memorisation of addition facts and to achieve mastery, including online websites (e.g., Mental Math) Resources include: - addition snake game - addition strip board - booklets of prepared tables (colour-coded red) and notation paper - box of loose addition combinations (flash cards) and four addition finger charts progressing in abstraction, including bingo game with sums on tiles - word problem card material - box of colour-coded bead bars - manipulable symbols (brackets, addition signs, equal signs - online websites that promote memorisation (e.g., Mental Math)
2.MA.080 Memorisation: subtraction facts	01 Explore and record all essential subtraction facts for minuends from 2-18 using concrete materials 02 Explore and record all subtraction facts with zero as a subtrahend for minuends from 1-18 using concrete materials 03 Memorise essential subtraction facts for minuends to 18 using finger charts 04 Use knowledge of subtraction facts to solve word problems 05 Prepare for mental calculation of subtraction (minuends to 99)	Activities include: - activities and games with subtraction strip board for researching subtraction facts for minuends to 18 - recording differences in prepared tables - games with loose cards and finger charts to develop memorisation of subtraction facts - solving subtractions (minuends to 18) with different unknowns (minuend, subtrahend or difference) - recording and verifying answers in all games and activities - solving word problems using knowledge of subtraction facts - follow-up activities to reinforce memorisation of subtraction facts and to achieve mastery, including online websites (e.g., Mental Math) Resources include: - subtraction snake game - subtraction strip board - booklets of prepared tables (colour-coded green) and notation paper - box of loose subtraction combinations (flash cards) and three subtraction finger charts

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		progressing in abstraction, including bingo game with differences on tiles - word problem card material - online websites (e.g., Mental Math)
2.MA.090 Memorisation: multiplication facts	01 Explore and record all essential multiplication facts for products from 1-100 using concrete materials 02 Memorise essential multiplication facts for products to100 using finger charts 03 Use knowledge of multiplication facts to solve word problems 04 Find equivalent combinations using concrete material (commutative law) 05 Memorise the multiples of numbers 1-10 by completing and/or reviewing skip counting of colour-coded bead chains (short chains: 1^2 - 10^2; long chains: 1^3 - 10^3) 06 Find squares and cubes of numbers 1-10 using the bead chains, bead squares and bead cubes 07 Discover that, when the multiplier is zero, the product is always zero for all multiplicands 08 Form, manipulate and solve multiplication combinations with brackets using concrete material (commutative and distributive laws)	Activities include: - activities and games with multiplication bead board for researching multiplication facts for products to 100 - recording products in prepared tables - games with loose cards and finger charts to develop memorisation of multiplication facts - solving multiplications (products to 100) with different unknowns (multiplicand, multiplier or product) - games with concrete material and charts in which the order of the factors is changed and equivalent (turn around) combinations are substituted (commutative law) - games in which all ways to make products to 100 are researched and recorded - solving word problems using knowledge of multiplication facts - reciting and recording the series of products/multiples used to skip count the colour-coded bead chains, gradually turning over the labels until reciting each series from memory - folding the bead chains and substituting bead squares and bead cubes - series of games with colour-coded bead bars including multiplication snake game; building multiplication tables; multiplying by10; small multiplications with bead bars; changing the order of the factors (commutative law); building the squares of numbers 1-10; comparing bead bar layouts of combinations to find 'common' multiples - using bead bars to find and record all ways to make the same product (1-100) - series of games using colour-coded bead bars and manipulable symbols (brackets, multiplication signs, addition signs, equal signs) to explore distributive law, including multiplying binomial and trinomial expressions by numbers 1-10 [e.g., (3+5)x6; (4+7+2)x3], multiplying a sum by a sum [e.g., (3+5)(4+7)]; analysing squares into binomial and trinomial representations [e.g., 102 represented as (3+7) 2]; using binomials to represent and analyse the progression of squares from 12 to 102, both

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		successive (e.g., 32 □ 42) and non-successive (e.g., 52 □ 82) - drawing representations, recording and verifying answers in all games and activities - follow-up activities to reinforce memorisation of multiplication facts and to achieve mastery, including online websites (e.g., Mental Math) Resources include: - multiplication snake game - multiplication bead board - booklets of prepared tables (colour-coded yellow) and notation paper - box of loose multiplication combinations (flash cards) and four multiplication finger charts progressing in abstraction, including bingo game with products on tiles - word problem card material - cabinet of colour-coded bead chains, squares and cubes - box of colour-coded bead bars - manipulable symbols (brackets, addition signs, multiplication signs, equal signs) - online websites (e.g., Mental Math)
2.MA.100 Memorisation: division facts	01 Explore and record all essential division facts for dividends from 1-100 using concrete materials 02 Memorise essential division facts for dividends to100 using finger charts 03 Use knowledge of division facts to solve word problems	Activities include: - activities and games using division *bead board* for researching division facts for dividends to 100 - recording quotients in booklets of prepared tables - games with loose cards and finger charts to develop memorisation of division facts - solving divisions (dividends to 100) with different unknowns (dividend, divisor or quotient) - solving word problems using knowledge of division facts - follow-up activities to reinforce memorisation of division facts and to achieve mastery, including online websites (e.g., *Mental Math*) Resources include: - division bead board - booklets (colour-coded blue) and notation paper - box of loose division combinations (flash cards) and division finger charts progressing in abstraction, including bingo game with products on tiles - word problem card material - online websites (e.g., Mental Math)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.MA.110 Decanomial: Table of Pythagoras	01 Build the decanomial, or Table of Pythagoras, bead array (concrete representation of all multiplication combinations for numbers 1 – 10) 02 Use the commutative law of multiplication to re-arrange the Decanomial bead array in a variety of ways	Activities include: - using knowledge of multiplication facts and colour-coded bead bars to build the Decanomial array/layout, first vertically and then horizontally - re-arranging the Decanomial bead bar array using the commutative law - commuting the Decanomial bead bar array to bead squares and then to bead cubes (1^3-10^3) arranged in a tower (*tower of jewels*) - using card material to build the Decanomial array expressed in numerals and algebraic notation. Resources include: - box of coloured bead bars (55 of each bead bar) - colour-coded bead squares and bead cubes from the bead chain cabinet - numerical and algebraic decanomial cards and envelopes.
2.MA.120 Multiples of numbers	01 Explore, analyse and record multiples and factors 02 Explore, analyse and record prime numbers and composite numbers	Activities include: - lessons and activities as needed to introduce vocabulary (multiple, factor, common multiple, prime factor, prime number) - using concrete materials (long bead chains, products formed with colour-coded bead bars) and/or memory to identify and record multiples of number 1-10 - identifying multiples for numbers 1-10 on Table of Multiples (numbers 1-100 laid out in a square), to find patterns and locate common multiples - using tables A and B to record all the possible factors of each multiple - using table C to identify prime numbers. Resources include: - cabinet of colour-coded bead chains, squares and cubes from the bead chain cabinet - box of colour-coded bead bars - Table of Multiples charts (to 100) - student records of multiples and factors - tables A, B, C.
Passage to abstraction (operations)		
2.MA.130 Passage to abstraction:	01 Combine knowledge of addition and subtraction (concept and process) with memorised essential facts to achieve passage to abstraction (calculation without the support of concrete material)	Activities include: - introduction to small bead frame with abacus and golden bead material

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
addition and subtraction		- counting through the hierarchies (units, tens, hundreds, thousands) as represented on the small bead frame - forming and reading numbers to 9999 on the small bead frame - notating numbers to 9999 on small bead frame paper - forming and solving 4-digit additions and subtractions on the small bead frame (from calculation without exchanging to calculation with exchanging, including calculation involving zeroes) and recording the calculations on *small bead frame* notation paper - completing the passage to abstraction (calculating additions and subtractions without the support of concrete material; notating addition and subtraction calculations without small bead frame notation paper as a guide) - extend calculations to addition and subtraction with 7-digit numbers using large bead frame and large bead frame paper aligned to interest and need. Resources include: - abacus and golden bead material for introduction - small bead frame and small bead frame notation paper - large bead frame and large bead frame notation paper - command cards; word problems.
2.MA.140 Decimal system hierarchies: extension	01 Manipulate, name and notate numbers to 6-digits 02 Recognise number 'families': — 'simple family' of units, tens, hundreds — 'family of thousands': thousands, tens of thousands, hundreds of thousands' — 'family of millions' 03 Mark groupings of digits with comma or separation	Activities include: - introduction to wooden hierarchical material (observing the colour-coding and relative size; link with golden bead material) - naming the concrete quantities (units, tens, hundreds, thousands, ten thousands, hundred thousands, millions) - sorting and labelling quantities by 'family' (hierarchy) using geometric shape, size and colour-coding as a guide - reading aloud and writing the symbols (words and numerals) for the quantities - matching symbols to quantities - expanding numerals into constituent hierarchies - making charts and cards. Resources include: - quantities to 1,000 represented in golden bead material (bead cube, square, bar, unit and colour-coded numbers on cards)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- quantities to 1,000,000 represented in wooden hierarchical material and labels (words and numerals).
2.MA.150 Passage to abstraction: multiplication	01 Combine knowledge of multiplication (concept and process) with memorised essential facts to achieve passage to abstraction (calculation without the support of concrete material) for multiplications with: – 1-digit multiplier – products to 4-digits	Activities include: - introduce and/or review multiplication x10, x 100 and x1,000 with *golden bead* material - introduce and/or review multiplication x10, x 100 and x1,000 with *small bead frame* - forming and solving small multiplications (1-digit multiplier; products to 4-digits) on *small bead frame* (from calculation without exchanging to calculation with exchanging, including calculation involving zeroes) and recording the calculations on *small bead frame* notation paper - completing the passage to abstraction with small multiplications (calculating multiplication without the support of concrete material; notating calculations without *small bead frame* notation paper as a guide). Resources include: - small bead frame - small bead frame notation paper - command cards; word problems.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	33 Combine knowledge of multiplication (concept and process) with memorised essential facts to achieve passage to abstraction (calculation without the support of concrete material) for multiplications with: — 2-digit and 3-digit multipliers — products to 6-digits 34 Expand 4-digit numbers to constituent hierarchies 35 Calculate mentally simple multiplications, including exchanging	Activities include: - introduction to large bead frame with wooden hierarchical material - counting through the hierarchies (units, tens, hundreds, thousands, ten thousands, hundred thousands, millions) as represented on the large bead frame - forming and reading numbers to 6-digits on the large bead frame - notating numbers to 6-digits on large bead frame notation paper - forming and solving multiplications (2-digit and 3-digit multipliers; 6-digit products) on the large bead frame and recording the calculations on large bead frame notation paper using expanded hierarchies and partial products - forming and solving multiplications (2-digit and 3-digit multipliers; 6-digit products) on the flat (golden) bead frame and recording the calculations, first without and later with partial products - completing the passage to abstraction (calculating short and long multiplications without the support of concrete material; notating short and long multiplication calculations without guide paper). Resources include: - large bead frame and large bead frame notation paper - flat (golden) bead frame - command cards; word problems.
	36 Combine knowledge of multiplication (concept and process) with memorised essential facts to achieve passage to abstraction (calculation without the support of concrete material) for multiplications with: — multipliers to 4-digits — multiplicands to 9-digits	Activities include: - introduction to multiplication checkerboard: colours and values - using colour-coded squares to build the checkerboard - exploring hierarchies by multiplying and dividing x10 - forming quantities with colour-coded bead bards on the checkerboard, and reading and writing the numbers - representing small multiplications with bead bars - forming and solving multiplications (9-digit multiplicands; multi-digit multipliers) on the *checkerboard* and recording the calculations, first without and later with partial products - using the *checkerboard* to make charts - introduction to the *bank game*: material, roles and rules

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- using the *bank game* to perform short and long multiplications and develop skills in mental multiplication - completing the passage to abstraction (calculating short and long multiplications without the support of concrete material; notating short and long multiplication calculations without guide paper). Resources include: - multiplication *checkerboard*, colour-coded number tiles and quantities represented in colour-coded bead bars - *bank game* card material.
2.MA.160 Passage to abstraction: division	01 Combine knowledge of division (concept and process) with memorised essential facts to achieve passage to abstraction (calculation without the support of concrete material) – dividends to 4-digits; 1-digit divisor – dividends to 6-digits; multi-digit divisors – zeroes in dividend and divisor 02 Perform division calculations using both distributive and group division 03 Calculate mentally simple divisions, with exchanging	Activities include: - introduction to *racks and tubes* (test tube material); observing the colour-coding, verifying 10 beads/tube - forming and solving short divisions (1-digit multiplier) using *racks and tubes*, and recording calculation, including divisions with zero in the quotient and the divisor - progressing step-by-step from horizontal notation with single and multi-digit divisors, including recording remainders, to vertical notation with multi-digit divisors recording intermediate remainders ('the next amount to be shared') and 'what has been used' - exploring processes for both distributive and group division - forming and solving long divisions (multi-digit divisors) using *racks and tubes*, and recording calculation (both distributive and group division) - completing the passage to abstraction (calculating and notating short and long divisions without the support of concrete material). Resources include: - racks and tubes - stamp game - command cards; word problems.
Fractions		
2.MA.170 Introduction to fractions	01 Understand the concepts 'whole' and 'fraction' 02 Name and notate fractions	Activities include: - stories, demonstrations, games and activities with concrete materials to build knowledge about the possibilities for dividing a unit into smaller quantities, concluding with emphasis on fractions (dividing the unit into equal parts) - forming fractions with concrete material

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	03 Use vocabulary for talking about the parts of a fraction (*numerator, denominator, fraction line*) 04 Manipulate and name fractions from halves to tenths	- learning the names of the parts of a fraction, and their etymology - saying the names of fractions and labelling the parts of fractions - name, label and notate all possible fractions formed with concrete material from halves to tenths (words and manipulable symbols) - making fraction charts and booklets - activities to build familiarity with a range of graphic representations of fractions e.g., shaded squares in a grid or shaded sectors of a pie graph - activities linking knowledge about fractions with the solution of real life problems. Resources include: - metal fraction insets (to tenths) - box of manipulable cut-out fractions - manipulable labels (words and symbols) - geometry charts - command cards.
2.MA.180 Equivalent fractions	01 Identify equivalent fractions 02 Reduce fractions to lowest terms 03 Explore variation in notation for equivalent fractions	Activities include: - using concrete material to find equivalent fractions within the range halves to tenths - notating equivalent fractions - reducing fractions to lowest terms using concrete quantities and manipulable symbols - creating charts and booklets - creating own problems (progressing from concrete representation accompanied by notation to increasingly abstract representation). Resources include: - fraction insets and labels - fraction research sheets - geometry charts - command cards; word problems.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.MA.190 Operations with fractions: same denominators	01 Add and subtract fractions with the same denominators 02 Multiply and divide fractions by a whole number	Activities include: - using concrete materials to add and subtract fractions with like denominators, accompanied by notation - using concrete materials to multiply and divide fractions with whole numbers, accompanied by notation - completing problems on command cards and/or creating own problems (progressing from concrete representation accompanied by notation to increasingly abstract representation - activities to build familiarity with a range of graphic representations of operations with fractions e.g., shaded squares in a grid or shaded sectors of a pie graph - activities linking knowledge about operations with fractions and the solution of real life problems. Resources include: - fraction insets and labels - geometry charts - command cards; word problems.
Money		
2.MA.200 History of money	01 Research the use of money over time and in different places	Activities include - research projects e.g., history of money; bartering, currency other than coins and notes e.g., shells, gold, money symbols and abbreviations ($ c); animals and people on Australian coins and notes; money used in the past or in different countries - going out activities e.g., visiting mint, museums - making charts, timelines, models and artwork, rubbing coins. Resources include: - coin and note collections - fundamental needs of humans timeline - research and reference materials (paper-based, digital, web-based, multimedia).
2.MA.210 Money	01 Understand concept and use of money 02 Learn units of money (dollars and cents) 03 Learn values of coins and notes 04 Apply knowledge of the decimal system to use of money 05 Performs operations with coins: — add — subtract (make change)	Activities include: - stories and games to introduce and explore money and its use - individual and group games and exercises with play money and real money in classroom to explore values, notation, exchanging across hierarchies and operations - making charts and booklets - practising mental calculation of money problems

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– multiply same amounts – divide (share amounts equally) 06 Performs operations with notes and coins: – add – subtract (make change) – multiply same amounts – divide (share amounts equally)	- going out e.g., to shops to buy items for projects - buying and selling e.g., craft items, food at school fair or fete. Resources include: - real and play money - command cards; word problems - commercial resources.
Data		
2.MA.220 Collecting, representing and interpreting data	01 Display objects and images according to previously established criteria 02 Interpret display to make generalisations 03 Deduce patterns in data or numbers and continue or extend pattern 04 Use a tally system when counting to collect data	Activities include: - sorting objects (e.g., by colour or shape), counting numbers in each category and building a display so data can be used to answer questions (e.g., What is the most common eye-colour in our class? What is the most common colour of the cars travelling down our street? What is the least common colour?) - completing or extending graphical and/or number patterns - using tallying and simple tables to record data (e.g., number of times particular numbers are thrown on a die). Resources include: - objects and events in the environment - dice and tally sheets - command cards; word problems.
	05 Collect and collate data and represent visually: 06 Read and interpret data represented in simple graphs and charts – picture graphs – tally graphs – column graphs – pie charts – flow charts	Activities include: - designing questions that can be used as the basis for a survey or data collection activity (e.g., favourite colour or pet) - designing simple tables and matrices to record data for a particular purpose - using images, icons or symbols to represent data categories - creating a scale based on size to represent data accurately - displaying data in simple graphs, using simple drawing equipment and/or simple software - interpreting data represented in simple graphs - applying knowledge of data representation and interpretation to a range of everyday contexts across the curriculum (e.g., recording weather patterns) - interpret graphs, and other ways of displaying data, and research their use in a range of paper-based and electronic resources. Resources include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- objects and events in the environment - tally sheets - graph paper and drawing equipment (paper-based and electronic) - paper-based, digital, web-based, and/or multimedia resources. - command cards; word problems.
2.MA.230 Recognising and exploring digital systems for a purpose	01 Experience and explore the logic of digital systems 02 Explore logic puzzles and strategy games 03 Explore the digital instructional language of coding	Activities include: - using simple flowchart format to systematise binary problem-solving solution to everyday problem - writing precise directions for an everyday task (e.g., making a PBJ sandwich) which are then acted out literally - using Lego Mindstorms to program Lego robots or Scratch to program a Tello drone or similar device with simple commands - disassemble and reassemble non-working computer tower system to identify parts (e.g., CPU, USB and ethernet ports, memory, keyboard, microphone and other input devices, speakers and other output devices, etc.) - learning chess and recording all moves on paper - solving wooden logic puzzles - using simple coding program such as Scratch to write simple programs that solve problems on the basis of user choices

Mathematics Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MA.010 History of mathematics	01 Listen to and read stories about the history of numbers and mathematics 02 Research ancient number systems — Aboriginal and Torres Strait Islander peoples — Babylonian — Egyptian — Mayan — Chinese — Hindu-Arabic — Roman 03 Explore the history of the number system used in our culture: the decimal system	Activities include: - great lesson: the story of numbers - independent research - creating charts, models and timelines - counting and calculating using earlier number systems eg Roman numerals. Resources include: - charts, card material and artefacts - research and reference materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MA.020 History of Mathematics	01 Explore and research history of mathematical invention and discovery 02 Study ancient and modern mathematicians	Activities include: - lessons and demonstrations - making timelines, charts, booklets and models - research projects including preparing biographies of mathematicians and accounts of mathematical systems from other times and places. Resources include: - story of numbers charts - Timeline of Mathematicians - research materials (paper-based, digital, web-based, multimedia).
3.MA.030 Numeration systems other than the decimal system	01 Study ancient and contemporary numeration systems other than the decimal system	Activities include: - lessons and demonstrations with concrete material - experimenting with other number systems to count and perform simple calculations e.g., Roman numerals noting the consequences of having no zero; base two/binary, base 5; base 60 - making timelines, charts, models and booklets - research projects e.g., use of base 2 in pre-contact Aboriginal and Torres Strait Islander communities and in computer-based technology; history and use of base 60 to measure angles and calculate time. Resources include: - teacher and student-made concrete material for working with other number systems - research materials (paper-based, digital, web-based, multimedia).
Memorisation, multiples and divisibility		
3.MA.040 Memorisation: review and extension	01 Review and consolidate knowledge of number facts (addition, subtraction, multiplication, division) 02 Develop automaticity, speed and accuracy of number fact recall and application to mastery level	Activities include: - activities to consolidate memorisation of number facts covered in curriculum for children aged from 6-9 years - activities to increase automaticity, speed and accuracy of number fact recall and application, including quizzes and speed tests, including online websites (e.g., Mental Math) Resources include: - concrete materials as needed - practice activities and games - paper-based, digital, web-based and/or multimedia resources (e.g., Mental Math)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MA.050 Multiples of numbers	01 Complete, review and consolidate knowledge of multiples	Activities include: - activities to complete, review and consolidate knowledge of multiples covered in curriculum for children aged from 6-9 years. Resources include: - concrete materials, charts and tables as needed - paper-based, digital, web-based and/or multimedia resources.
3.MA.060 LCM and GCF (HCF)	01 Find lowest common multiple (LCM) 02 Find greatest (highest) common factor (GCF/HCF)	Activities include: - demonstrations and lessons with pegboard - finding divisors using the pegboard - finding LCM and GCF/HCF using pegboard - finding LCM and GCF/HCF using prime factors - calculating LCM and GCF/HCF abstractly - solving word problems - using knowledge of LCM in operations with fractions. Resources include: - pegboard, colour-coded pegs and labels - card material - paper-based, digital, web-based and/or multimedia resources.
3.MA.070 Divisibility	01 Explore, formulate and recognise rules for establishing divisibility of numbers	Activities include: - exploring divisibility using golden bead material - making divisibility charts - applying knowledge of prime factors to study of divisibility - identifying divisibility rules for number groups. Resources include: - golden bead material - pegboard, colour-coded pegs and labels - divisibility tables and charts - paper-based, digital, web-based and/or multimedia resources.
Operations (whole numbers)		
3.MA.080 All operations	01 Review and consolidate knowledge of operations with whole numbers 02 Master operations with whole numbers 03 Perform complex operations with whole numbers	Activities include: - activities to review and consolidate mastery of the four operations with whole numbers covered in curriculum for children aged from 6-9 years - activities to increase automaticity, speed and accuracy of calculations - using technology to verify answers e.g., calculators

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- applying knowledge of decimal system, memorisation and operations in a range of practical contexts e.g., money, measurement. Resources include: - concrete materials as needed - command cards; word problems - paper-based, digital, web-based and/or multimedia resources.
3.MA.090 Multiplication	01 Develop skill in mental multiplication	Activities include: - group activities with the bank game - mental multiplication with continuous exchanging - verifying answers. Resources include: - bank game card material - paper-based, digital, web-based and/or multimedia resources.
	02 Develop skill in cross multiplication 03 Extend skill in mental calculation	Activities include: - demonstrations and lessons - forming and solving long multiplications using cross multiplication - making charts and tables - writing products directly onto paper without concrete material - using technology to verify answers. Resources include: - multiplication checkerboard and extensions - calculators - paper-based, digital, web-based and/or multimedia resources.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MA.100 Division	01 Complete and master concept and process of distributive division with multi-digit divisors 02 Complete and master concept and process of group division with multi-digit divisors 03 Develop skill in division with zero in dividend and divisor	Activities include: - demonstrations and lessons - forming long divisions and solving using distributive division, first with, and later without, concrete material (racks and tubes), recording calculations including intermediate remainders - forming long divisions and solving using group division, first with, and later without, concrete material (stamp game), recoding calculations - verifying answers using concrete material and technology. Resources include: - racks and tubes material - stamp game - calculators - command cards - paper-based, digital, web-based and/or multimedia resources.
Fractions and decimals		
3.MA.110 Fractions: review	01 Review and consolidate knowledge of fractions 02 Build mastery in the use of fractions 03 Review and consolidate knowledge of equivalence 04 Review and consolidate ability to reduce fractions to lowest terms	Activities include: - activities to consolidate knowledge of fractions and fraction notation covered in curriculum for children aged from 6-9 years - activities to consolidate knowledge of equivalence covered in curriculum for children aged from 6-9 years - activities to consolidate ability to reduce fractions to lowest terms, first with concrete material and later abstractly - exploring variety of ways for representing fractions e.g., shaded squares in a grid or shaded sectors of a pie graph - activities linking knowledge about fractions with the solution of real life problems. Resources include: - metal fraction insets (to tenths) - box of manipulable cut-out fractions - labels (words and symbols) - geometry charts - command cards; word problems - paper-based, digital, web-based and/or multimedia resources.
3.MA.120 Types of fractions	01 Review equivalent fractions and variation in notation for equivalent fractions 02 Explore the following types of fractions and corresponding notation:	Activities include: - using concrete material to review equivalent fractions, reducing fractions to lowest terms and corresponding notation

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– proper and improper fractions – mixed numbers – unlike fractions	- activities with concrete materials and manipulable labels to explore improper fractions, mixed numbers and unlike fractions - creating charts and booklets - creating own problems (progressing from concrete representation accompanied by notation to increasingly abstract representation). Resources include: - fraction insets and labels - fraction research sheets - geometry charts - command cards; word problems - paper-based, digital, web-based and/or multimedia resources.
3.MA.130 Operations with fractions: unlike denominators	01 Find the lowest common multiple of unlike denominators 02 Add fractions with unlike denominators 03 Subtract fractions with unlike denominators 04 Multiply a whole number by fraction 05 Multiply a fraction by a fraction 06 Divide a whole number by a fraction 07 Divide a fraction by a fraction 08 Divide fractions using group division 09 Perform complex operations with fractions	Activities include: - initial lessons and demonstrations with concrete material - forming and solving problems, first with concrete material and later abstractly - finding common denominators using: transparency and grid paper (drawing), raising or reducing, LCM/LCD as needed. Resources include: - fraction insets and skittles - handmade transparency - charts - command cards; word problems - notation paper - paper-based, digital, web-based and/or multimedia resources.
3.MA.140 Decimals: introduction	01 Build knowledge of decimals to millionths (0.000001) 02 Use notation for decimals to millionths (0.000001)	Activities include: - activities with concrete materials that reveal relationship between fractions and decimals - identifying and reading aloud decimal numerals to millionths - forming decimals to millionths in quantities and symbols - matching quantities and symbols - counting activities forwards and back - reading and notation activities: comparing decimal quantities and notation; placing the decimal point; comparing whole numbers and decimal numbers; forming complex numbers - making charts; pinwheel, candelabra - representing decimal fractions graphically in a variety of ways. Resources include: - fraction insets

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- yellow board of decimal hierarchies, colour-coded beads, charts and colour-coded cards - command cards - lined paper - paper-based, digital, web-based and/or multimedia resources.
3.MA.150 Decimals: operations	01 Perform four operations with decimals 02 Perform complex operations with decimals	Activities include: - demonstrations and lessons in adding and subtracting decimals, with exchanging, using concrete materials and corresponding notation - activities multiplying decimal numbers by 10, 100 and 1000 using concrete material - demonstrations and lessons in multiplying decimal numbers by whole numbers, whole numbers by decimal numbers and decimal numbers by decimal numbers, using concrete material - demonstrations and lessons in dividing decimal numbers by whole numbers, whole numbers by decimal numbers and decimal numbers by decimal numbers, using concrete material - forming and solving own problems with decimal numbers - recording and verifying answers - formulating rules and notation for abstract calculation i.e. without concrete material - verifying answers using concrete material and technology. Resources include: - fraction insets - yellow board of decimal hierarchies, charts and card material - decimal checkerboard with bead bars and tiles - concrete material for division with decimal numbers - command cards; word problems - calculators - paper-based, digital, web-based and/or multimedia resources.
3.MA.160 Percentage	01 Transfer knowledge of fractions and decimals to explore the concept of percentage 02 Apply knowledge of percentages to solve practical problems	Activities include: - demonstrations and exercises with concrete materials to explore the relation between fractions, decimals and percentages - converting fractions such as thirds and sixths to decimals and percentages - calculating 1% and10% - exploring fractions of percentages - formulating rules and notation for calculating percentage problems

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- solving percentage problems e.g., research projects, discounting, profit and loss, simple interest, compound interest - applying knowledge of percentage to practical problems. Resources include: - fraction insets - yellow board of decimal hierarchies, charts and card material - hundredth circle - commercial resources - command cards; word problems - paper-based, digital, web-based and/or multimedia resources.
Powers of numbers		
3.MA.170 Powers of numbers: introduction	01 Understand the concept of powers of numbers 02 Express any number as a power of 10 03 Sequence powers geometrically	Activities include: - reviewing knowledge of multiples applied making squares and cubes - story: the kingdom of powers to introduce 0 power, 1st power, 2nd power, 3rd power - activities to identify a unit and increase its power and to label each power - demonstrations and lessons on the Kingdoms of 10 and of 1 - drawing and labelling activities - verifying answers using concrete material and technology. Resources include: - wooden hierarchical material - cabinet of colour-coded bead chains, bead squares and bead cubes - power of 2 material - calculators - paper-based, digital, web-based and/or multimedia resources.
3.MA.180 Powers of numbers: notation and operations	01 Use exponential notation 02 Use powers in operations	Activities include: - demonstrations to build knowledge of vocabulary for talking about the notation of powers of numbers: base, index - using power notation to label bead squares and bead cubes - labelling and sequencing powers represented geometrically - comparing size and shape of powers in a geometric sequence - using power notation to write very large and very small numbers - adding and subtracting; multiplying and dividing powers of numbers (same base/different base)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- building the algebraic formula for expanding powers, and operations with powers - forming and solving own problems with powers - verifying answers using concrete material and technology. Resources include: - cabinet of colour-coded bead chains, bead squares and bead cubes - wooden cubing material - calculators - command cards - paper-based, digital, web-based and/or multimedia resources.
Squaring and cubing		
3.MA.190 Squaring	01 Review and consolidate knowledge of squaring developed in the curriculum for children aged from six to nine years 02 Extend knowledge and application of squaring 03 Perform operations with squares (addition, subtraction, multiplication, division, combined operations)	Activities include: - constructing squares of numbers 1-10 using concrete material - calculating the passage from one square to another square using concrete materials i.e. calculating the difference between the squares and recording calculation - notating squares of single numbers - completing and reviewing the decanomial (bead array and numerical card layout) - building the algebraic formula for squaring - building the algebraic decanomial (card layout and notation) - solving problems with squares of numbers (four operations), first with concrete material, and later without - applying knowledge of squaring to decimal numbers using concrete material - verifying squares of numbers using concrete material and technology. Resources include: - golden bead materials - box of bead bars - numerical and algebraic decanomial card material - pegboard, colour-coded pegs and labels - colour-coded decimal beads - colour-coded guide squares - command cards - calculators - paper-based, digital and web-based resources.
3.MA.200 Products of binomial and	01 Review squaring of binomials (a+b)2 and trinomials (a+b+c)2 covered in the	Activities include: - analysing 100-bead square into a binomial or trinomial

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
trinomial squares	curriculum for children aged from six to nine years 02 Use binomial and trinomial representation and notation to expand squares of 2- and 3-digit numbers 03 Find products of binomial and trinomial squares: — units only — tens and units 04 Consolidate and extend notation of the squares of 2- and 3-digit numbers represented as binomials and trinomials	- building binomial and trinomial squares with coloured-coded bead bars and golden bead material - using colour-coded pegs on a pegboard to represent products and squares of 2- and 3-digit numbers - representing products and squares of 2- and 3-digit numbers symbolically using binomial and trinomial notation - calculating products and squares of binomials and trinomials using concrete and symbolic representation - forming squares of decimal numbers using colour-coded pegs on a pegboard - using guide squares to calculate squares of 2- and 3-digit numbers represented as binomials and trinomials - building the algebraic formula for calculating the square of a binomial and trinomial - cross-multiplication activities. Resources include: - golden bead materials - box of bead bars - pegboard, colour-coded pegs and labels - colour-coded guide squares - command cards - paper-based, digital, web-based and/or multimedia resources.
3.MA.210 Square roots	01 Understand and work with the concept of square root of a number 02 Determine the square root of a 2- and 3-digit number represented as a binomial or trinomial 03 Find square roots abstractly	Activities include: - naming simple squares and identifying their roots using concrete material - drawing and labelling squares and labelling their roots - finding square roots of 2- and 3-digit numbers represented as binomial and trinomial squares using colour-coded pegs, and recording answers - estimating square roots using concrete materials and records of square root calculations - building the algebraic formula for calculating square root - guided abstract calculation of square roots and recording - verifying answers using concrete material and technology. Resources include: - golden bead materials - bead squares - pegboard and colour-coded pegs

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- guide squares and handmade charts - graph paper - command cards - calculators - paper-based, digital, web-based and/or multimedia resources.
3.MA.220 Cubing	01 Build knowledge of the concept of the cube of a number 02 Cube successive numbers using concrete material 03 Perform cubing calculations	Activities include: - demonstrations and lessons - using colour-coded concrete material to recognise and name simple cubes, and identify their roots - using concrete material to construct cubes - cubing binomials and trinomials using concrete materials and labelling the parts - building the algebraic formula for cubing - constructing cubes with decimal numbers using concrete material. Resources include: - bead cubes - wooden cubing material - command cards - calculators - paper-based, digital, web-based and/or multimedia resources.
3.MA.230 Cube Root	01 Understand and work with the concept of cube root of a number 02 Determine the cube root of 2- and 3-digit numbers represented as a binomial or trinomial 03 Find cube roots abstractly	Activities include: - finding cube roots of 2- and 3-digit numbers represented as binomial and trinomial cubes using wooden cubing material, and recording calculations and answers - building the algebraic formula for calculating cube root - guided abstract calculation of cube roots and recording - verifying answers using concrete material, 'backtracking' and technology. Resources include: - bead cubes - wooden cubing material - binomial cube - trinomial cube - hierarchical trinomial cube - box of unit cubes - handmade charts - command cards - calculators - paper-based, digital, web-based and/or multimedia resources.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Algebra		
3.MA.240 Simple linear equations	01 Solve linear equations in addition, subtraction, multiplication and division in all areas of the mathematics curriculum	Activities include: - using concrete material to find unknown terms in simple linear equations, notating calculations using algebraic conventions and recording answers - forming equations and solving for unknown terms using algebraic notation, and recording answers. Resources include: - colour-coded concrete materials - manipulable signs and symbols - command cards - calculators - paper-based, digital, web-based and/or multimedia resources.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MA.250 Equations with squares of binomials and trinomials	01 Identify and manipulate the terms of expanded binomial (a+b)2 and trinomial (a+b+c)2 expressions 02 Write and solve equations that include squares of numbers and sums of binomials and trinomials squared	Activities include: - reviewing representation of binomial and trinomial squares using concrete materials and notation - manipulating and constructing concrete representations of binomial and trinomial squares and labelling the terms - drawing squares of 2- and 3-digit numbers represented as binomials and trinomials using colour-coded hierarchies - calculating the squares of binomial and trinomial expressions - using concrete material and manipulable labels to build and balance equations, and isolate unknowns - substituting numerical terms with algebraic terms in equations - forming equations and solving for unknown terms using algebraic notation, and recording answers - verifying answers using concrete material and technology. Resources include: - golden bead material - box of bead bars - bead squares - pegboard and pegs - grid paper and coloured pencils - binomial and trinomial cubes - wooden cubing material - command cards - calculators - paper-based, digital, web-based and/or multimedia resources.
Relative numbers		
3.MA.260 Positive and negative numbers	01 Understand the concept of integers 02 Explore positive and negative numbers 03 Use positive and negative numbers in operations	Activities include: - demonstrations and lessons - using concrete material form and compare positive and negative numbers - forming and solving problems with positive and negative numbers. Resources include: - negative snake game - number lines - box of bead bars - division skittles - command cards; word problems - paper-based, digital, web-based and/or multimedia resources.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MA.270 Rational and irrational numbers	01 Explore the concept of rational and irrational numbers 02 Recognise and use notation for rational and irrational numbers 03 Performing calculations with rational and irrational numbers	Activities include: - activities with concrete materials, recording answers - using concrete materials to form rational and irrational numbers - making charts and booklets - activities to explore rational and irrational numbers using technology - calculation activities with rational and irrational numbers. Resources include: - number line - box of bead bars - fraction insets - colour-coded decimal number cards - command cards - paper-based, digital, web-based and/or multimedia resources.
	04 Find square roots of rational and irrational numbers	Activities include: - naming simple squares and their roots - drawing and labelling squares and their roots - finding square roots with concrete materials, recording answers - calculating square roots abstractly - using technology to calculate square roots. Resources include: - pegboard, colour-coded pegs - guide squares - handmade charts - command cards - paper-based, digital, web-based and/or multimedia resources.
3.MA.280 Repeating and non-repeating decimal numbers	01 Explore repeating and non-repeating decimal numbers	Activities include: - demonstrations and lessons - recognizing and identifying a repeating decimal - forming and solving own problems - making charts and booklets - using technology to explore repeating and non-repeating numbers. Resources include: - materials for the study of decimal fractions - command cards - paper-based, digital, web-based and/or multimedia resources.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Data		
3.MA.290 Collecting, representing and interpreting data	01 Review and extend knowledge of data collection, representation and interpretation covered in the curriculum for children from six to nine years 02 Identifying and extending patterns in data and number 03 Use vocabulary for talking about data and data representation: set, average, mean-median-mode; quantity-category, continuous-discrete; cluster-outlier; sample-census, spreadsheet, database, distribution, frequency, range, statistics 04 Design a key to represent the scale used to represent categories and amounts of data 05 Construct simple line graphs to represent continuous change and use vocabulary for talking about the parts of line graphs (axes, horizontal axis, vertical axis, scale, point, plot) 06 Build a repertoire of data collection and representation techniques and tools, including tables and matrices, bar graphs and pie graphs, flowcharts, electronic database and spreadsheet	Activities include: - designing own research questions (for topics across the curriculum) that involve data collection and interpretation (whole class, small group and individual projects) - collecting data using the most effective technique to answer a research question - selecting the most effective way of representing the data to answer a research question - using computer databases and spreadsheet programs (e.g., Apple Numbers, Google Sheets, Microsoft Excel) - interpreting and evaluating data represented in a variety of ways e.g., in the media, textbooks, reference materials - displaying data using presentation software (e.g., Keynote, Powerpoint, Google Slides, or Prezi) - solving puzzle problems with patterns to be identified and extended - study of codes (e.g., Morse Code, Semaphore flags, etc.) - applying interpretation and evaluation of different representations of data across the curriculum e.g., as evidence in persuasive texts - discussions, essays, debates, spoken presentations; to predict probability. Resources include: - textbooks - materials for data collection and drawing (paper-based and electronic) - command cards; word problems - paper-based, digital, web-based and/or multimedia resources.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MA.300 Identify and explore digital systems for a purpose	01 Identify and explore a range of digital systems with peripheral devices for different purposes, and transmit different types of data 02 Collect, access and present different types of data using simple software to create information and solve problems 03 Explore logic puzzles and strategy games 04 Explore the digital instructional language of coding 05 Explore online collaborative systems for personal and group time management	- disassembling and reassembling non-working computer tower system to identify parts (e.g., CPU, USB and ethernet ports, memory, keyboard, microphone and other input devices, speakers and other output devices, etc.) - investigating, then mapping or drawing the computer network in the school, including wireless and wired systems - monitoring solar energy usage from panels on school measured by online energy usage software - using Lego Mindstorms to program Lego robots or Scratch to program a Tello drone or similar device with simple commands - using online library management software to checkout / return loaned books as class chore; conduct catalogue searches - using USB accessories to collect data for science experiments (e.g., to measure soil temperature or water purity, etc) - using online collaborative systems (e.g., Google Classroom, Hangouts and online Calendars) to organize classroom and school events and encourage their use in students' own lives - organising files, images or other collected data into folders with a hierarchical structure - learning chess and recording all moves on paper - solving wooden logic puzzles - using coding program such as Scratch or Python to write simple programs that solve problems on the basis of user choices

Geometry and Measurement

Overview

The word *geometry* is derived from the Greek words for earth and measurement. The word *geometry* literally means 'measuring the earth'. The Montessori approach to teaching geometry involves the use of concrete materials, which engage with the children's sense of wonder and which encourage children to measure for themselves the world they live in.

In the Montessori curriculum the first knowledge about shapes and space is gained through activity with concrete materials in the *Children's House*. This sensory work is extended in the geometry lessons in the environment prepared for children from six to nine years old. All new concepts continue to be introduced through activities in which children manipulate concrete materials, but from the age of six children independently complete a sequence of activities that build deeper understanding and move them towards abstraction. Manipulative work with concrete materials always precedes the presentation of an abstract concept or formula. Ideally, children, during their own independent work, begin to verbalise the concepts and formulae in conversation, although if, unusually, children do not make this step for themselves, an adult will model how to talk about the concept using the language of geometry.

Learning the names of geometric shapes and their parts is an important aspect of the study of geometry. As in the *Children's House* children take part in spoken language lessons in which they learn the names of geometric shapes and their parts, but for children beyond the age of six, naming lessons also include:

- learning the origin, or etymology, of the name
- learning definitions and systems of classification
- reading and writing the names.

In addition to the names, children of this age want to know the reasons for things so they are given opportunities to explore questions such as:

- Why do we say this is an acute angle?
- How many right angles would make a whole angle?

Following most presentations, children take part in follow-up activities with card materials and booklets.

The lessons in geometry are keys to enable children to follow their own interests in this area of study. They are encouraged to explore the concrete materials to find new relationships, variations and extensions. As in all areas of the Montessori curriculum for children of this age, the initial lessons and the children's use of the concrete materials provides them with the knowledge they need as a starting point for their own exploration and discovery.

The study of geometry for children from the age of six begins with an exploration of the foundation concepts: *point – line – surface – solid*. These concepts are then explored in more detail in a sequence of follow-up lessons. From the same starting point, the actual sequence may vary from child to child. For example, work on lines and angles might be presented parallel to one another, and some early polygon work can be presented parallel to later work with angles. Whatever sequence is followed, work in each area progresses logically, with each new lesson building on the one before. For example, children complete work that builds an understanding of equivalence, before they work with area, and the work with area precedes the work on volume. In the case of the study of circles, the work follows a progression such as the following:

- identification of linear, then surface parts
- relationships between a line and a circle
- relationships between two circles
- relationships between circles and polygons

- circumference, radius and their relationship
- area of a circle

As in all areas of the Montessori *Cosmic Education* curriculum, the study of geometry is designed to encourage activity, repetition, exploration, discovery, logical thinking and reasoning. The initial lessons are clear and succinct, providing children with enough knowledge to allow them to ask pertinent questions, and enough guidance to initiate independent activity with the materials. It is through this activity that children make the knowledge their own and learn to research and think for themselves.

The study of measurement in the Montessori *Cosmic Education* curriculum, begins with an account of the historical development of measuring, comparing and estimating. The children explore the reasons humans in earlier times might have wanted to, or needed to, measure, compare and estimate. They also experiment with the use of non-standard units and units used in earlier times, in particular, units based on parts of the body, including, for example, the hand, the palm and the cubit. They use these units to measure objects in the environment. During these activities children recognise the need for standardised units, as exemplified, for example, in the story of the royal cubit from Ancient Egypt. They are then introduced to the standard measurement systems in use today, beginning with the International Metric System. As students learn different elements of this system, they apply their knowledge, first, to measuring activities in the everyday environment, selecting the most appropriate standard unit and recording the measurement of, for example, the length of the school hall, the temperature of the classroom, the volume of water in a watering can or the mass of a can of pet food. Finally, students apply their knowledge during activities and research projects across all areas of the curriculum and in the solving of real-life problems, including, for example, calculating how much water the garden needs each day, or how many days the bird food will last before more needs to be purchased.

Geometry and Measurement Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.GM.010 History of geometry	01 Listen to and read stories about the history of geometry and geometry in early civilisations 02 Research use of geometry in different cultures and across history	Activities include: - the story of geometry - independent research - creating charts, models and timelines - researching the use of geometry in earlier times e.g., Ancient Egypt, Mesopotamia - researching the use of geometry across cultures e.g., Aboriginal and Torres Strait Islander cultures in Australia. Resources include: - charts, card material and artefacts - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.GM.020 History of measurement	01 Explore the history and purpose of measurement 02 Explore and experiment with non-standard and standard units of measurement	Activities include: - stories and discussions about measurement - brainstorming all the possible phenomena we can measure and ways we can measure - activities to draw attention to the importance of standard units of measurement - activities to become familiar with International Metric System - experimenting with a range of units of measurement e.g., invented units; units used in the past, units used in other countries e.g., imperial units - imagining how humans might measure things in the future - creating timelines, charts and booklets. Resources include: - timeline of measurement - charts, card material and artefacts - reference and research materials (paper-based, digital, web-based, multimedia).
Solid Geometry		
2.GM.030 Solid Geometry	01 Introduce, review and/or consolidate knowledge of geometric solids: *cube, square-based prism, triangular-based prism, square-based pyramid, triangular-based pyramid, cone, cylinder, ellipsoid, ovoid, sphere* 02 Recognise, name and label geometric solids 03 Sort and classify solids 04 Develop and extend spatial awareness	Activities include: - demonstrations and lessons with wooden geometric solids to review names of geometric shapes, and to introduce etymology of names - activities with Montessori geometric solids and manipulable bases - labelling geometric solids (spoken and written) - game of relationships - describing and classifying solids e.g., according to base/surfaces - model-making and technical drawing - researching solids in the environment. - building complex solid constructions using the Box of 250 Cubes from Cube Up! card materials - assembling flatpack furniture for classroom from included instructions (e.g., IKEA) - designing and building own furniture in teams from cardboard sheets and masking tape - designing and creating Rube Goldberg machines Resources include: - basket of wooden geometry solids and manipulable bases - labels and booklet - construction equipment e.g., modelling clay, construction paper - solids in the environment

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- command cards - CubeUp! card material from Nienhuis - reference and research materials (paper-based, digital, web-based, multimedia).
Plane Geometry		
2.GM.040 Plane geometry: introduction	01 Review and consolidate knowledge of plane geometric shapes: — triangle, square, circle — types of triangles (scalene, isosceles, equilateral; acute-angled, obtuse-angled, equilateral) — types of quadrilaterals (common quadrilateral, rectangle, square, parallelogram, rhombus, kite, trapezium) — regular polygons (pentagon, hexagon, heptagon, octagon, nonagon, decagon) — curved figures (circle, ellipse, oval) — compound and curvilinear figures (curvilinear triangle, 'flowers') 02 Recognise and name plane geometric shapes 03 Draw plane geometric shapes	Activities include: - demonstrations and lessons with geometry cabinet to review names of geometric shapes and to introduce etymology of names - sorting shapes and replacing in frames - labelling shapes - tracing, cutting, gluing, drawing and writing activities - making charts and booklets - researching shapes in the environment - using a digital camera to photograph shapes, lines or angles for a photobook Resources include: - geometry cabinet - shapes in the environment - scissors, coloured paper and glue - technical drawing equipment - command cards - reference and research materials (paper-based, digital, web-based, multimedia) - digital camera
2.GM.050 Plane geometry: constructive triangles	01 Use wooden triangles of different types to construct a variety of shapes 02 Recognise and name constructed shapes 03 Draw constructed shapes	Activities include: - using pairs of triangles to construct a variety of triangles and quadrilaterals - discovering more shapes by sliding, pivoting and flipping triangles - using sets of triangles to construct hexagons, pinwheels and related complex shapes - tracing, cutting, gluing, drawing and labelling activities - research in the classroom environment; including photographing shapes with a digital camera Resources include: - constructive triangles (rectangular boxes and triangular boxes) - command cards - scissors, coloured paper and glue - technical drawing equipment - command cards - reference and research materials (paper-based, digital, web-based, multimedia - digital camera

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.GM.060 Plane geometry - detailed study: fundamental concepts	01 Build knowledge of fundamental geometry concepts: – point – line – surface – solid	Activities include: - games and activities for exploring concepts with everyday objects and concrete materials - linking geometry (point, line, surface, solid) with concrete mathematics materials (unit bead, ten-bar, hundred-square, thousand-cube) - labelling - creating charts, booklets and models - research in environment. Resources include: - everyday objects - golden bead material - models, card material and labels - scissors, coloured paper and glue - technical drawing equipment - command cards - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.070 Plane geometry - detailed study: lines	01 Identify types of lines: *straight, curved* 02 Identify parts of lines: *origin, ray* 03 Identify positions of a straight line: *horizontal, vertical, oblique* 04 Identify relative positions of two straight lines: parallel, convergent, divergent, transversal, perpendicular 05 Build definitions related to lines	Activities include: - demonstrations, stories, lessons and games, including lessons to introduce etymology of names - manipulating and labelling models and pictures - introduction to the *box of sticks* - building and reading definitions - drawing activities - creating charts, booklets and models - research lines in environment. Resources include: - box of sticks (colour-coded and calibrated sticks and arcs used to construct plane geometric figures) - picture, label, definition and booklet material - command cards - drawing equipment - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.080 Plane geometry - detailed study: angles	01 Identify parts of angles: *vertex, arm* 02 Identify types of angles: *acute, obtuse, whole* 03 Build definitions related to angles	Activities include: - demonstrations and activities using concrete materials to construct and label parts of angles and to build different types of angles - learning the etymology of the terms - labelling the parts of angles and types of angles on models and pictures - building and reading definitions - drawing and labelling activities - creating charts and booklets - researching angles in the environment.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		Resources include: - box of geometry sticks - geometry charts - drawing equipment - envelopes with pre-cut paper figures (triangles, quadrilaterals, figures with five or more sides) - picture, label, definition and booklet material - command cards - researching angles in the - protractor, compass and ruler - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.090 Plane geometry - detailed study: measurement of angles	01 Understand how to measure the size of an angle i.e., amount of turn 02 Use unit of measurement for angles: degrees 03 Measure angles and record measurements, using protractors 04 Explore different types of angles: *whole, convex, reflex* 05 Apply knowledge of addition and subtraction to angles 06 Explore relations between the angles of polygons	Activities include: - story and demonstrations to introduce the measurement of angles: story of the star; the Babylonian civilisation - demonstrations and activities for measuring angles - tracing and measuring the angles of insets e.g., geometry cabinet, small insets - using measurements to identify different types of angles - creating and measuring own angles - demonstrations and activities with concrete materials for operations with angles (addition, subtraction) - bisecting angles using a compass - researching the angles in regular and irregular polygons - measuring angles in the environment - making charts and booklets - applying knowledge to real life tasks e.g., construction projects, model-making, design - research activities e.g., how architects measure angles. Resources include: - Montessori protractor - commercial protractors - fraction insets, geometry cabinet insets, small insets - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.GM.100 Plane geometry - detailed study: polygons	01 Classify types of plane figures: closed curves-polygons, concave-convex 02 Classify types of polygons: *irregular, regular* 03 Classify polygons: — the seven triangles of reality, classified according to sides and angles — the seven quadrilaterals of reality — polygons with more than four sides 04 Identify and label the parts of polygons: surface, perimeter, sides, angles, vertices, base, height, diagonal	Activities include: - demonstrations, stories and lessons to introduce each family of shapes e.g., the Story of Pythagoras to introduce the right-angled triangle - constructing, manipulating, comparing and labelling plane figures using concrete material - labelling images - building and reading definitions - drawing and labelling activities - creating charts and booklets - research plane figures in the environment. Resources include: - box of geometry sticks - geometry charts - drawing equipment - picture, label, definition and booklet material - command cards - protractor, compass and ruler - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.110 Tessellation	01 Tessellate figures 02 Use knowledge of angles and their measurement to explore the mathematics of tessellation	Activities include: - demonstrations and games with concrete material to explore tessellation: which tiles? how many ways?, combining shapes, interstices - command cards - design activities (tracing, cutting, gluing, drawing, constructing, creating mosaics) - activities involving the measurement and addition of angles - researching tessellation in the environment - research projects e.g., tessellation in nature, use of tessellation for building and decoration across time. Resources include: - tiling game (Box 1 and 2) - Tangram activities - command cards - Montessori protractor - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.120 Symmetry	01 Explore and understand the concept of symmetry 02 Experiment with the axis of symmetry in a variety of shapes	Activities include: - demonstrations and games with concrete material - exploring etymology of the terms e.g., symmetry, axis - paper-folding, construction, drawing, labelling and design activities - research in the environment

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- applying the concept of symmetry e.g., in visual arts. Resources include: - constructive triangles - coloured paper, glue - drawing and visual arts equipment and resources - command cards - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.130 Similarity, congruence and equivalence	01 Identify, name and construct congruent, similar and equivalent figures	Activities include: - demonstrations, lessons and games with concrete material - exploring etymology of terms and working with symbols - paper-folding, construction, drawing, labelling and design activities - making charts and booklets - research in the environment - applying concepts e.g., in visual arts, construction - research projects. Resources include: - iron (small) insets - constructive triangles (triangular box, large and small hexagonal boxes) - insets of equivalence - command cards - objects in environment - reference and research materials (paper-based, digital, web-based, multimedia).
Measurement		
2.GM.140 Area of a surface: introduction	01 Become familiar with the concept of surface area 02 Explore units of measurement for area 03 Measure and record area using a grid	Activities include: - informal measurement activities e.g., make a square metre out of paper and use it to measure the area of the classroom - comparing areas of familiar spaces e.g., rooms, playground - using square grids to measure and compare the areas of surfaces e.g., in drawing, construction and mapping activities - applying knowledge to everyday tasks e.g., construction and design projects - simple exercises in counting squares to calculate area. Resources include: - everyday materials - command cards; word problems

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.150 Volume: liquid capacity	01 Understand and apply the concept of liquid capacity (volume) 02 Learn units of measurement for liquid capacity (litres, millilitres) 03 Measure and record liquid capacity 04 Choose the most appropriate unit of liquid capacity for amount to be measured 05 Research other measurements of liquid capacity	Activities include: - filling and pouring activities to compare the liquid capacity of familiar containers - activities to become familiar with units for measuring liquid capacity including history of the litre, relationship between litre and smaller units (millilitre) and larger units (megalitre), etymology and meaning of the word metre, prefixes (milli-, mega-), abbreviations - measuring the liquid capacity of a range of containers and recording measurements - displacement activities to measure the volume of air or solids e.g., measuring the liquid displaced when a blown up balloon is put into a bucket of water - creating booklets and tables - applying knowledge to real life tasks e.g., cooking, science experiments - research activities related to liquid capacity e.g., specialised units, units used in the past or in other countries. Resources include: - calibrated containers e.g., cups, jugs - card material - containers in environment - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.160 Length	01 Understand and apply the concept of length 02 Learn units of measurement for length (metre, centimetre, millimetre, kilometre) 03 Measure and record length of objects 04 Measure and record heights (centimetres, metres) 05 Research and record distances (kilometres) 06 Choose the most appropriate unit of length depending on size of object, distance etc 07 Research other measurements of length	Activities include: - activities to become familiar with units for measuring length including history of the metre, relationship between metre and smaller units (centimetre, millimetre) and larger units (kilometre), etymology and meaning of the word metre and prefixes (milli-, centi-, kilo-), abbreviations - measuring the length of a range of objects, heights and distances and recording measurements - researching and recording heights, distances of familiar journeys - creating booklets and tables - applying knowledge to real life tasks e.g., construction projects, planning journeys, classroom height chart, making clothes or costumes

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- research activities related to length e.g., specialised units, units used in the past or in other countries, units used in sport. Resources include: - ruler, metre stick and tape measure - card material - objects and people in environment - grid paper - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.170 Mass	01 Understand and apply the concept of mass 02 Learn units of measurement for mass (gram, milligram, kilogram) 03 Measure and record mass of objects 04 Choose the most appropriate unit of mass depending on object 05 Research other measurements of mass	Activities include: - activities to become familiar with the concept of mass e.g., using informal units to measure mass; hefting activities to compare and estimate the mass of objects - activities to become familiar with standard units for measuring mass including history of the gram, relationship between gram and smaller units (milligram) and larger units (kilogram), etymology and meaning of the word gram and prefixes (milli-, kilo-), abbreviations - measuring the mass of a range of objects, and recording measurements - creating booklets and tables - applying knowledge to real life tasks e.g., cooking, science experiments, health - research activities related to mass e.g., specialised units, units used in the past or in other countries. Resources include: - ruler, metre stick and tape measure - card material - objects and people in environment - grid paper - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.180 Temperature	01 Understand and apply the concept of temperature 02 Learn units of measurement for temperature (degrees) 03 Measure and record temperature 04 Research other measurements of temperature	Activities include: - using hands/fingertips to estimate and compare temperatures of familiar objects and materials - activities to become familiar with units for measuring temperature (degrees) including history, etymology and abbreviations - using a liquid thermometer to measure the temperature of liquids - measuring the outside and inside temperature at different times of the day, in the sun and in the shade etc

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- using a thermometer to measure own temperature or record body temperature changes over a day - creating booklets and tables - research activities related to temperature e.g., units used in the past or in other countries, meaning of changes in body temperature, meaning of average temperatures in climate science. Resources include: - different types of thermometers - card material - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.190 Estimation	01 Estimate measurements of a range of phenomena	Activities include: - all introductory measurement activities - activities involving estimation, comparison and graphing - applying estimation skills to real life tasks e.g., in cooking, science experiments, planning *going out* activities and trips. Resources include: - all measurement materials - command cards; word problems.

Geometry and Measurement Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.GM.010 History of geometry	01 Explore and research development and application of geometry through history and across cultures 02 Study ancient and modern scholars in the field of geometry	Activities include: - research activities e.g., application of geometry past and present; use of geometry in agriculture, engineering, visual art and design etc - creating charts, models and timelines - preparing biographies e.g., Euclid, Leonardo da Vinci - working with and designing geometry-based puzzles. Resources include: - charts, card material and artefacts - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.GM.020 History of measurement	01 Explore and research development and application of measurement through history and across cultures	Activities include: - research activities e.g., measurement past and present, International Metric System, measurement in the digital age, measuring very small and very large dimensions - creating timelines, charts and booklets. Resources include: - timeline of measurement - charts, card material and artefacts - reference and research materials (paper-based, digital, web-based, multimedia).
Solid Geometry		
2.GM.030 Solid Geometry	01 Review, consolidate and extend knowledge of solid geometry 02 Apply knowledge of solid geometry in a range of contexts 03 Develop and extend spatial awareness	Activities include: - exercises to review and consolidate knowledge of basic shapes - exploring the properties of complex geometric solids e.g., polyhedrons - making nets and models - representing 3-D shapes on 2-D surface - technical drawing e.g., perspective - researching solids in the environment. - building complex solid constructions using the Box of 250 Cubes from Cube Up! card materials Resources include: - construction equipment e.g., modelling clay, construction paper, computer programs - solids in the environment - reference and research materials (paper-based, digital, web-based, multimedia). - CubeUp! card material from Nienhuis
Plane Geometry		
2.GM.040 Plane geometry: constructive triangles	01 Use wooden triangles of different types to construct a variety of compound and complex shapes 02 Recognise and name constructed shapes 03 Draw constructed shapes 04 Use knowledge of measurement of angles to explore the mathematics of shapes constructed with the triangles	Activities include: - using sets of triangles to construct a variety of composite figures - exploratory activities with the triangles and the shapes they construct e.g., inscribed figures, researching relationships between figures, transforming one composite figure to another - measuring angles to explore relationships between figures - tracing, cutting, gluing, drawing and labelling activities - research in environment. Resources include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- constructive triangles (Triangular box, large and small hexagonal boxes) - command cards - scissors, coloured paper and glue - technical drawing equipment - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.050 Plane geometry - detailed study:	01 Complete, review, consolidate and extend detailed study of plane shapes covered in the curriculum for six- to nine-year-olds, including: – lines – angles – polygons – tessellation 02 Extend vocabulary for talking about plane shapes, including *bisect, median, perpendicular, points of concurrency*	Activities include: - demonstrations, exercises and games - learning etymology of terms - manipulating models, pictures, labels and definitions - drawing activities - creating charts, booklets and models - research in the environment. Resources include: - *box of sticks* picture, label, definition and booklet material - tiling game and Tangram material - command cards - drawing equipment - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.060 Plane geometry - detailed study: angles	01 Complete, review, consolidate and extend detailed study of angles covered in the curriculum for six- to nine-year-olds 02 Recognise relations between: – pairs of angles – angles formed by two lines and transversal: interior-exterior, adjacent-opposite, complementary-supplementary 03 Use knowledge of measurement of angles to analyse the relationships numerically 04 Explore the sums of angles of polygons 05 Explore angle bisectors 06 Build definitions related to relations between angles	Activities include: - demonstrations and activities using concrete materials - learning the etymology of the terms - measuring and labelling models and diagrams - building and reading definitions - drawing, measuring and labelling activities - adding, subtracting and bisecting angles - creating charts and booklets - researching angles in the environment. Resources include: - box of geometry sticks - geometry charts - drawing equipment - picture, label, definition and booklet material - command cards - protractor, compass and ruler - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.070 Plane geometry - detailed study: circle	01 Identify and label the linear parts of a circle: *centre, radius, diameter, chord, arc, circumference* 02 Identify and label the parts of the surface of a circle: s*ector, segment*	Activities include: - demonstrations, stories and lessons, including the etymology of the terms - constructing, manipulating, comparing and labelling plane figures using concrete material - labelling images - building and reading definitions

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	03 Explore relationships between a circumference and a straight line (*external*, *tangent, secant*) 04 Explore relationships between two circles (*external*, *internal, externally tangent, internally tangent, intersecting, concentric*)	- drawing and labelling activities - creating charts and booklets - research plane figures in the environment. Resources include: - box of geometry sticks - geometry charts - drawing equipment - picture, label, definition and booklet material - command cards - protractor, compass and ruler - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.080 Symmetry, similarity, congruence and equivalence	01 Complete, review, consolidate and extend study of symmetry, similarity, congruence and equivalence covered in the curriculum for children from six to nine years	Activities include: - exercises and games - paper-folding, construction, drawing, labelling and design activities - research in the environment - applying the concepts e.g., in visual arts. Resources include: - iron (small) insets - constructive triangles (triangular box, large and small hexagonal boxes) - insets of equivalence - command cards - objects in environment - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.090 Insets of equivalence: detailed study	01 Use concrete material to explore 'families' of polygons for relations of equivalence: — triangle — rhombus — common parallelogram — trapezium — regular polygons 02 Use concrete materials to build theorems of equivalence, including theorem of Pythagoras	Activities include: - demonstrations, lessons and games with concrete material - exploring etymology of terms and working with symbols - paper-folding, construction, drawing, labelling and design activities - making charts and booklets - research in the environment - applying concepts e.g., in visual arts, construction - research projects. Resources include: - insets of equivalence - command cards, objects in environment - reference and research materials (paper-based, digital, web-based, multimedia).
Measurement		
2.GM.100 Area: surfaces	01 Review and extend knowledge of surface area	Activities include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	02 Explore units of measurement for area (square metre) 03 Choose the most appropriate unit of measurement for area 04 Use concrete material to build formulae for calculating area of: – rectangle – common parallelogram – triangle (including right-angled and obtuse-angled) – square – circle 05 Extend knowledge of area to build formulae for calculating area of other quadrilaterals: rhombus, kite, trapezium, common quadrilateral	- demonstrations, games and exercises to introduce the concept of area and its measurement - manipulating concrete materials to build formulae for calculating area of polygons - using paper to extend work with building formulae for polygons - stories, demonstrations and games to build formulae for calculating area of a circle - activities to become familiar with units for measuring area including, relationship between square metre and smaller units (square centimetre), etymology and meaning of words and prefixes, and use of abbreviations (cm2,. m2) - calculating area of familiar objects - creating charts and booklets - applying knowledge to real life tasks e.g., construction and design projects - research activities related to area e.g., specialised units, units used in the past or in other countries. Resources include: - yellow area material - green and yellow circles - card material - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.110 Volume: solids	01 Extend knowledge of volume to solids 02 Use unit of measurement for volume of solids (cubic metre) 03 Apply the concept of equivalence to volume of solids 04 Use concrete material to build formulae for calculating volume of: – solids – rectangular prism – other prisms – solids that are not prisms (pyramid, cylinder, cone, sphere)	Activities include: - demonstrations, games and exercises to introduce the concept of volume of solids - exploring displacement with concrete materials - manipulating concrete materials to build formulae calculating the volume of solids - activities to become familiar with units for measuring volume of solids including, relationship between cubic metre and smaller units (cubic centimetre), etymology and meaning of words and prefixes, and use of abbreviations (cm3,. m3) - calculating volume - of familiar objects - creating charts and booklets - applying knowledge to real life tasks e.g., construction and design projects - research activities related to area e.g., specialised units, units used in the past or in other countries. Resources include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- volume material - card material, objects in the environment - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
2.GM.120 Length, mass and temperature	01 Complete, review, consolidate and extend knowledge of measurement (length, mass and temperature) 02 Use knowledge of and experience with measurement to extend and apply estimation and comparison skills 03 Apply knowledge of measurement to a range of projects and problems	Activities include: - applying knowledge and experience of measurement to estimation and comparison in everyday tasks and across the curriculum - using measurement in everyday tasks, across the curriculum and in research projects. Resources include: - range of measuring equipment - card material - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).

History and Social Sciences

World History, Political and Economic Geography

When children first enter the Montessori environment prepared for children from six to nine years of age, they are introduced to the study of history through a series of *great stories*. This is fitting, as history is in essence a series of 'stories'. In Italian one word, *storia,* is used for both *history* and *story*, that is, for the retelling of events unfolding over time.

Five *great stories*, or cosmic fables, are presented to the children:

1. *the formation of the universe*
2. *the story of the coming of life*
3. *the story of the coming of humans*
4. *the story of communication in signs*
5. *the story of numbers*

Each fable is like one act of an unfolding drama. Each act links back to the last, and foreshadows the next, each introducing another area of study.

- The fable of the *formation of the universe* opens up the geography curriculum.
- The *story of the coming of life* begins the biology curriculum.
- The *story of the coming of humans* introduces the study of prehistory.
- The *story of communication in signs* enhances the study of language.
- The *story of numbers* enhances the study of mathematics.

Together, the last two stories in the series provide a point of departure for the study of civilisations.

Although these fables are presented as part of the history curriculum, they reveal the overlap and interplay between all the subject areas, in this way exemplifying the concept of *cosmic education*. The sequence of the fables follows our understanding of the process of evolution, from the formation of the universe, to the coming of life, the coming of human beings and then the coming of civilisation. To present these concepts in this order builds children's understanding incrementally, helps them become aware of the inter-dependence of life, and prompts questions such as the following:

- Could humans exist if there had been no life?
- Could life exist without the formation of the Earth?

The children, however, are never asked questions such as these directly. Instead, their orientation to the universe, and their place in it, and the questions they ask about it develop through independent exploration.

In the *story of the coming of humans*, emphasis falls on the work and service of early humans. Unlike conventional history, there is less reference to the deeds and exploits of famous individuals, but rather a focus on the nameless and faceless ordinary humans, the *uomini senza volto,* who in their efforts to survive and make life easier for themselves, contributed to the progress of all the peoples of the world, and to the benefits we have inherited. To help children explore this 'everyday history', they are given a chart of the fundamental human needs as a guide to explore the lives and contribution of humans in different places and different periods of time.

When children eventually reach the study of human civilisations, they are introduced to the coming of civilisation through the advent of written language and numbers. These momentous human inventions are presented to the children as gifts passed down from ancestors, an inheritance representing many generations of work.

The human story is one of constant change involving many inventions and discoveries brought about by the restless and inquiring nature of the human mind. It is important that children use their imaginations to think about the difference these discoveries have made to the everyday lives of people in all times and places. There are of course many inventors, who will remain nameless, anonymous benefactors who, whether or not they or we are aware of it, have had a remarkable impact upon our lives. For example, it is impossible to know who discovered how to make and control fire, agriculture, shelter, or who first thought of the wheel or the needle, and yet without these discoveries and inventions human life would be very different indeed.

Studying the human story in this way enables children to see themselves as a part of the whole, a protagonist in the drama of the earth. Children are able to see that even if they do not become famous or a powerful public figure, their actions will nonetheless have an effect, as an ordinary person, not as a passive player but as an actor who can influence the world in positive ways, and that in this way everyone counts. Despite all the war, tragedy, horror and despair that children find out about in their study of human history, are confronted with daily in the media, and, sadly for too many, experience in real life, they will be able to appreciate that there is still much to admire in human achievement and feel gratitude for those who came before them.

There is another theme that emerges from the levels of work revealed in the great fables. This is that the work undertaken by all non-living and living things, including humans, in order to meet their basic needs, has the potential to lead to a wonderful by-product. All this work has the potential to contribute to the wellbeing of the whole earth and all life on earth. In the process of working from the whole to specifics in this way, children come to the history of their own nation.

In the study of history, children in the Montessori environment for six to twelve year olds examine the concept of migration. Various human groups have built up large banks of knowledge in order to meet their physical and spiritual needs in their particular region of the earth. The way this knowledge has been shared, until recently, has been through migration. This sharing is now possible through modern modes of communication.

In an Advanced Montessori Training Course held in Kodaikanal, India, in March 1944, Dr Maria Montessori described the Montessori approach to the teaching of history in the following way:

> *We have to show a different side of history to the children, where history is understood as the documentation and testimony of mankind. Man the worker who transformed the initial desolate landscape, the world in its primordial state into the present Garden of Eden. Man the provider, the generous, the tireless worker, and the one who possesses the great spirit of self-sacrifice. Those are the men who are god's chief agents on earth for continuing the work of creation, all of us.*

The Study of Australia

In Montessori learning environments prepared for six to twelve year olds, the *cosmic education* curriculum introduces children to the study of the universe, the earth and life on the earth. Through this study they come to understand themselves more fully, as well as the contributions they can make to life on earth and human society. Building on this foundation, children also study their homeland, Australia. This work builds on early experiences with Australian Studies presented to children in the *Children's House*.

The study of cultural and economic geography in the Montessori *cosmic education* curriculum shows children how the physical configurations of the earth contribute to the history of humans. Children discover how everything, including non-living things such as the air, rocks, water, wind and sun, as well as living things, the plants and animals explored in the study of biology, are interconnected and interdependent, everything working together to make up the ecological whole. Children discover that each non-living element has an important role to play, and that each obeys that set of natural laws that lead to the formation of the universe. The study of physical geography becomes the basis for the study of economic geography, which shows the

interdependence of all human beings. In this way, children discover how the physical configuration of the earth contributes to the history of all people who live on the earth.

As in all other areas of the Montessori *cosmic education* curriculum, the cultural and economic geography lessons presented to the children are merely a starting point for learning and discovery. The study begins with concrete experience, first-hand observation and participation. As often as possible, children go out into the field to experience and research areas of the curriculum for themselves.

Australian History	- the history and culture of First Peoples of Australia (pre- and post-European settlement to the present) - European voyages of discovery - European colonies and life - Australian Federation - Australian migrants and multicultural Australia
Cultural and Economic Geography	- plant and animal life, and ecological systems of Australia - people's connection to the land - resources of Australia - Australia's neighbours - populations, wealth and health
Civics and Citizenship	- three tiers of Australian government - elections, voting, laws and bills - Democracy

Sciences

Montessori environments prepared for children from six to twelve years have fully equipped science areas in which children undertake experiments relating to all areas of the physical and life sciences, including:

- astronomy
- physics and chemistry
- geography and geology
- biology and ecology

When children enter the environment prepared for six to nine year olds, the first science experiments they encounter reveal basic knowledge that helps them understand:

- the formation of the solar system
- the earth and its parts
- the development of life on earth
- the needs of plants and animals.

Subsequent science experiments enable children to explore in more detail topics in geography and biology. As children complete the experiments, and design some of their own, they learn about the struggle of life to survive and evolve, and the benefits of this vast work over millennia. Children come to see that they have a place in the universe, and in the web of life, as well as a responsibility to contribute to their world in productive ways. As a result, children begin to engage in problem-solving activities relating to themselves and their role in the natural and social environment. Most importantly, they learn that their life is full of meaning.

Physical Sciences: astronomy, dynamic geography, chemistry and physics

The study of the physical sciences is presented as a series of discussions and stories, with the help of charts and experiments to illustrate key points. Each story or discussion opens up a new area of science, providing a key to further exploration. These keys enable children to understand the physical world in which they live.

When children have an understanding of how the universe was formed, and the laws that underpin the formation of the earth, they are able to follow their interests to explore any aspect of the physical sciences, including:

- stars, planets, comets and black holes
- landforms, weather phenomenon and changes to the earth
- atoms, molecules, states of matter and chemical changes
- light, sound, magnets and simple machines

Life Sciences: Biology and Ecology

In the Montessori *cosmic education* curriculum, biology highlights the interdependence of all living and non-living things within the environment and the ways in which these interdependent relationships are sustained. The aim of this area of the curriculum is to foster in children an ecological view of the web of life and a feeling of responsibility for the environment. To provide children with an intellectual tool for ordering and relating information about the biological world, systems for classifying living things are introduced.

The study of biology includes both botany and zoology. Children engage in a range of activities through which they investigate and classify the plant and animal kingdoms. They examine:

- the internal and external parts of plants and animals
- the vital functions of plants and animals, including locomotion, nervous system, respiration, nutrition, and reproduction

In summary, studying biology in this way offers children a means for classifying plants and animals, allowing them to order and relate biological facts. The study reveals how systems of classification follow evolution. Children discover that each life form on earth, while apparently selfishly fighting for its own survival, is in reality serving the good of the whole. Dr Montessori called this phenomenon the *cosmic plan*.

History and Social Sciences Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Time		
2.HS.010 Time: first knowledge	01 Explore ways to represent the passing of time 02 Sequence and record major events of own life in timeline format 03 Explore stories of families and past events 04 Explore the concepts of past, present and future	Activities include: - recording the passing of time in informal ways - demonstrations and exercises for exploring ways to represent time spatially e.g., on a timeline - experiencing historical stories through photographs, artefacts, books, oral histories, digital media and Going Outs (e.g., museums, etc.) - activities and games for establishing the importance of a standard measurement of time

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- creating personal timelines with illustrations and writing e.g., My Life in months/years; My Family in years - creating a family tree to represent interconnected relationships over time - transforming a class 'diary' into a timeline - activities for exploring how the three fundamental tenses (past, present, future) are expressed in language. - activities to develop skills to pose questions about past and present objects, people, places, and events Resources include: - personal timelines outlines - photographs and drawings; family members - digital camera - the three fundamental tenses card material.
2.HS.020 Measuring time: day	01 Understand concept of a day 02 Measure time across a day in hours, minutes and seconds 03 Read analogue and digital clocks (hour, half hour, quarter hour, minute) 04 Read digital clocks (24-hour time) 05 Research the telling of time in different times and cultures	Activities include: - *parts of* the day demonstrations, games and exercises - learning units of time that subdivide the day, spelling and etymology of their names, abbreviations - creating My Day booklets for hours and fractions of hours (e.g., half past, quarter to) and minutes - lessons and exercises to learn how to tell the time (spoken), accompanied by notation (words and symbols) - recording the timing of daily routines - reading and creating timetables and itineraries e.g., for the class or school, for an excursion or going out; television and public transport timetables - grace and courtesy e.g., telling the time or estimating time needed to be punctual for a lesson or meeting, or to meet a deadline - collecting data and information through observation and research activities - researching the telling of time e.g., the way people told the time in the past; the link between astronomy, navigation and time; Greenwich mean time - imagining how people might tell the time in the future. Resources include: - the parts of the day card material - teaching clocks with moveable hands and card material - clock stamps

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- different types of instruments for telling the time e.g., clocks, watches, a sundial, candle and water clocks - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
	06 Understand the link between the rotation of the earth and am/pm notation 07 Use am/pm notation in own work 08 Use knowledge of am/pm to explore time zones around the world	Activities include: - demonstrations and exercises to link earth's rotation with *am/pm* notation - activities to explore etymology of terms *ante meridian* and *post meridian* - making *My Day* booklets for *am/pm* time - research projects e.g., comparing time zones in two or more parts of the world, time zones and air travel. Resources include: - day and night chart - models of globe and sun - time zones work chart - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia).
2.HS.030 Measuring time: week and month	01 Understand concept of a week 02 Sequence and name the days of the week 03 Learn etymology and spelling of day names 04 Understand concept of a month 05 Sequence and name the months 06 Learn etymology and spelling of month names	Activities include: - stories, demonstrations and lessons about the history and etymology of the names of the days and the months - rhymes, games and exercises to learn about the days of the week and months of the year e.g., sequence, number of days in each month - using small moveable alphabets to explore spelling patterns in the names of the days and the months - research projects related to the days and months. Resources include: - card material - two small moveable alphabets in different colours - reference and research materials (paper-based, digital, web-based, multimedia).
2.HS.040 Measuring time: year	01 Understand concept of a year 02 Measure time across a year in months and weeks 03 Use a calendar 04 Understand sequence and duration of events across years	Activities include: - the Year and its Parts demonstrations, games and exercises - counting and notating years e.g., of own life span, family birthdays and life spans - creating a Family Chart to compare ages of all family members - creating a timeline of My Life - creating a personal calendar

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	05 Understand the counting and notation of the years	- creating charts and booklets - converting a calendar to a timeline - using a calendar or diary to record and/or plan events. Resources include: - the parts of the year card materials - calendar and card materials - photographs; family members - *golden bead* number cards - command cards; word problems - reference and research materials (paper-based, digital, web-based, multimedia, such as voice memo software on a digital device to collect data or stories for timelines of child's life).
2.HS.050 Measuring time: century	01 Understand concept of a century 02 Measure human history in centuries 03 Understand the terms BC and AD, and BCE and CE 04 Compare the time since the coming of humans to the history of the earth	Activities include: - BC/AD stories, demonstrations, games and exercises - extending concept of BC/AD to BCE/CE - student presentations and research projects. Resources include: - *BC*/AD timeline and card material - timeline of millennia - long black line - reference and research materials (paper-based, digital, web-based, multimedia).
Human History		
2.HS.060 Fundamental needs of humans	01 Recognise and build understanding of the fundamental survival needs of humans, both spiritual (religion, arts/culture, adornment) and material (food, clothing, defence, transport, shelter) 02 Understand history in terms of humans attempting to meet their fundamental needs across time and place 03 Track the development of ways humans have met each fundamental need across time (vertical study) 04 Review the ways humans met all their fundamental needs at one point in history (horizontal study) 05 Use the fundamental needs taxonomy to guide/scaffold exploration of customs and practices of family and local community (e.g., commemorative events)	Activities include: - fundamental *needs of humans* demonstrations, lessons and discussions - activities with *timeline of millennia* and picture material e.g., transportation or communication technology through the ages (vertical); how people met their fundamental needs in Europe in the Middle Ages (horizontal) - *going out*, excursions and guest speakers - making timelines, charts and models, artwork - student presentations, collaborative discussions, debates, factual and creative writing, drama - explore points of views and fact from opinion. - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects using the fundamental needs taxonomy as guide/scaffold e.g., history projects, researching the needs and roles of people (parents, teachers, doctors, fire fighters, farmers, bakers, police) and social institutions

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	06 Use the fundamental needs taxonomy to guide/scaffold exploration of different cultures in terms of their settlements, demographic characteristics and lifestyles in different times and places	in the local community (home, school, library, clubs). - activities to develop skills to pose questions about past and present objects, people, places, events and issues Resources include - fundamental needs of humans charts 1 and 2 - timeline of humans 1 - timeline of millennia - card material: pictures, labels and written descriptions for how each human need was met at different points in history - artefacts - reference and research materials (paper-based, digital, web-based, multimedia).
2.HS.070 The coming of humans	01 Build understanding of the coming of humans on earth 02 Build understanding of the expanses of time before and after the arrival of humans on earth 03 Build understanding of the links between the changing surface and climate of the earth (e.g., ice ages) and the development of humans 04 Build understanding of relative length of time humans have been on the earth 05 Gain some understanding of human ancestors, the world they lived in and their special characteristics: adaptable mammals walking upright with free hands, opposable thumbs; ability to think, reason, imagine, love, migrate, communicate 06 Explore how early humans in Palaeolithic times learned to meet their fundamental needs 07 Recognise the difference between pre-history and history	Activities include: - great story: the coming of humans - linking the timeline of humans with the clock of eras, the long black line and the timeline of life - the hand chart activities and discussions e.g., the significance of opposable thumbs - tracing the ages of humans from the Palaeolithic to the present - exploring how Palaeolithic humans met their fundamental needs - etymology lessons for the names of early humans and the ages of humans - making timelines, charts and models, artwork - student presentations, collaborative discussions, factual and creative writing, drama - *going out*, excursions and guest speakers e.g., Aboriginal and Torres Strait Islander language speakers, members of different communities, museum visits - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects e.g., creation stories from different times and places used to explain the coming of humans to the earth; human ancestors; early humans Resources include: - long black line - timeline of life - timeline of humans - the hand chart - fundamental needs of humans charts 1 and 2 - card material - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.HS.080 Society and civilisation	01 Use the fundamental needs taxonomy to guide/scaffold exploration of how different civilisations have met their fundamental human needs 02 Build first knowledge of some ancient civilisations e.g., Aboriginal and Torres Strait Islander cultures, Mayan, Polynesian, Babylonian, Ancient Egyptian, Ancient Greek, Roman	Activities include: - presentations, lessons and collaborative discussions - making timelines, charts and models, artwork - student presentations, debates, factual and creative writing, drama - *going out*, excursions and guest speakers e.g., Aboriginal and Torres Strait Islander language speakers, members of different communities, museum visits - explore points of views and fact from opinion. - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects. - activities to develop skills to pose questions about past and present objects, people, places, events and issues Resources include: - fundamental needs of humans charts 1 and 2, and card material - timeline of millennia - timeline of civilisations (from 4,000 BC) - reference and research materials (paper-based, digital, web-based, multimedia).
Australian History		
2.HS.090 Our Nation to Our Local Communities	01 Build knowledge of the span of the civilisation of First Peoples of Australia on the Australian continent 02 Build understanding of relative length of time non-First Peoples of Australia have lived on the Australian continent 03 Build first knowledge of key periods and events in Australian history, their significance, and how they are commemorated 04 Use the fundamental needs taxonomy to guide/scaffold exploration of how Australians have met their fundamental needs at different times in their history 05 Build a first knowledge of the natural resources used by Australians to meet their fundamental needs over time 06 Understand the use of 'Acknowledgement of Country' and 'Welcome to Country' at ceremonies and events to recognise that the	Activities include: - lessons, activities and exercises to introduce key understandings and topics - building timelines, models, charts - learning history/etymology of place names e.g., Australia = *land of the south; Great South Land* - working with artefacts and primary sources - exploring the ways Australians have met their fundamental needs at different times reading/viewing cultural works related to Australian history e.g., poetry, stories, films - explore significant days and weeks celebrated and commemorated in Australia (Australia Day, ANZAC Day, National Sorry Day) - researching local Aboriginal or Torres Strait Islander Peoples, their concept of Country/Place, history and languages - research the history of a significant person, building, site and/or part of the natural environment in the local community and what it reveals about the past

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	traditional custodians of the land, sea, waterways and sky are acknowledged 07 Build an understanding of local community history over time, the diversity of its people, and the significance of how they met their fundamental needs	- spoken presentations, collaborative discussions, debates and drama; dance, singing and music-making - factual and creative writing, artwork, multimedia composition e.g., historical recounts and biographies - going out, excursions and guest speakers - explore points of views and fact from opinion. - collecting data and information through observation and research activities for interpretation and drawing conclusions - reflecting on ways to care for places of significance or importance, or to respond to issues or challenges - research projects. - activities to develop skills to pose questions about past and present objects, people, places, events and issues Resources include: - Australian history timelines e.g., timeline for Aboriginal and Torres Strait Islander people, timeline of Australia since European settlement and/or Federation - artefacts, age-appropriate Australian literature and factual writing, artefacts - *fundamental needs of humans* charts 1 and 2, and card material - timeline of humans - timeline of millennia - timeline of civilisations - artefacts and natural materials - reference and research materials (paper-based, digital, web-based, multimedia). - local Aboriginal or Torres Strait Islander Elders or community members who can share local histories and stories
2.HS.100 Cultural & economic geography: the work of humans	01 Build first knowledge of the economic work of humans and the products humans make and use by exploring questions such as: — Who are the workers who produce the products we use everyday? — Where do food and clothes come from, who produces them and how do they reach us? — What do workers need so they can produce the things we use everyday? — What do different workers produce? e.g., the farmer, the baker	Activities include: - demonstrations with real products, charts and card material - locating where products come from and exploring why - reflecting on ways to care for places of significance or importance, or to respond to issues or challenges - observation in the environment - *going out*, excursions and guest speakers - making artwork, models, maps, drama - student presentations, collaborative discussions, debates, factual and creative writing - explore points of views and fact from opinion.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	02 Develop gratitude for the work of others and how their work benefits us 03 Develop an awareness of the origin of place names, including First Peoples of Australia origins: — personally (home) — locally (suburb, town, district) — regionally (state) — nationally (country) 04 Develop awareness of the significance of places based upon cultural, historical, community and personal experiences, and the importance of caring for them, including Aboriginal and Torres Strait Islander connections to particular Country/Place 05 Identify the difference between natural, managed (farms, parks, gardens) and constructed (roads, buildings) features, how they change and how humans care for them 06 Identify the types of human activities within places and the reason for their locations (retail, medical, education, police, waste management, farming, etc.) 07 Develop an understanding of how people are connected through places, locally, across Australia and globally 08 Recognise that people visit various places and the frequency of these visits are affected by purpose, distance and accessibility	- collecting data and information through observation and research activities for interpretation and drawing conclusions - independent research projects e.g., where different products come from, what different producers make; explore the work of those in service industries e.g., nurses, doctors, police, teachers. - activities to develop skills to pose questions about past and present objects, people, places, events and issues Resources include: - economic geography card material - objects and artefacts - reference and research materials (paper-based, digital, web-based, multimedia).

Physical and Life Sciences Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
The Earth		
2.SC.110 Globes to maps	01 Understand how 2D maps are used to represent the 3D globe 02 Name and identify parts of the earth: continents, oceans 03 Review and consolidate knowledge of the names of the continents and of the oceans	Activities include: - demonstrating how continents and oceans on a 3D globe can be represented on a 2D map - locating continents and oceans on the globe - activities to consolidate knowledge of names, including etymology and spelling - labelling continents and oceans on maps - making first maps - going out, excursions and guest speaker - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects. Resources include: - sandpaper globe, blue and white globe - puzzle map of continents, labels - reference and research materials (paper-based, digital, web-based, multimedia).
2.SC.120 Continents and countries: first knowledge	01 Build knowledge of the continent of Australia and neighbouring countries of Oceania: — location, capital and flag of each country — seas adjacent to each country — location, capital and flag of each Australian state and territory — Aboriginal and Torres Strait Islander boundaries in comparison to Australian states and territories 02 Build knowledge of other continents and their countries: location, capital, flag, adjacent seas 03 Exploring the parts of flags 04 Exploring emblems, anthems and other symbols of: — Australian commonwealth and states — countries in Oceania region — countries in other continents of the world	Activities include: - finding continents on globe and puzzle map of continents - working with puzzle maps and related blue and white maps: putting pieces in map; labelling countries and seas; matching each country with its capital and flag - making maps and flags; singing anthems - *going out,* excursions and guest speakers - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects e.g., research country of origin of parents or grandparents. Resources include: - globes - geography cabinet: puzzle maps, matching paper maps, labels (brown, blue, red and white), flags - map-making equipment - drawing and construction materials - picture material and maps - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.SC.130 Landforms	01 Review knowledge of and define major landforms: – island/lake – peninsula/gulf – isthmus/strait – cape/bay – archipelago/chain of lakes 02 Locate on maps major land and water forms in: – the world – Australia – home state	Activities include: - demonstrations, model-making and labelling of pairs of landforms with modelling clay and water - building definitions - reading activities: sorting and matching pictures, labels and definitions; organising jumbled definitions, booklets - finding particular land and water forms on maps e.g., world map, map of Australia - making maps, charts, models and booklets - going out and excursions e.g., museums, land and water forms in the environment - guest speakers - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects. Resources include: - globe - equipment for making models of land and water forms - card material: diagrams, labels, definitions, booklets - photographs and maps - map-making equipment - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.SC.140 Maps and plans	01 Understand the cardinal points of the compass and how they are used 02 Use a compass 03 Read maps to find locations 04 Draw simple plans 05 Make maps	Activities include: - the *story of direction:* north, south, east, west and intermediate directions e.g., north east - using a compass for orientation and to find the way - drawing plans for simple objects; using plans to build models - drawing plans and building models of a classroom or house (real and imaginary) - drawing plans of the local area, with a key and with directions marked - learning the map-maker's alphabet - creating and reading treasure maps - using maps to find the highest and lowest points on the earth - *going out,* excursions, guest speakers. Resources include: - globes, photographs and maps - equipment for making maps - points of the compass card material - reference and research materials (paper-based, digital, web-based, multimedia).
The History of the Earth		
2.SC.150 The creation of the Universe	01 Explore and discuss the creation of the universe 02 Imagine the dimensions of the universe: the span of time, the vastness of space, the number of stars 03 Consider the laws and forces behind the formation of the universe and the earth: cold and heat, energy and matter, time and space, the speed of light, forces of attraction, the three states of matter, the effect of cold and heat on matter (contract/expand), volcanoes and water vapour	Activities include: - great story: the formation of the universe, including the history of the earth, with demonstrations and experiments - independent work with experiments and charts - going out, excursions and guest speakers - making timelines, charts and models, artwork - student presentations, discussions, factual and creative writing, drama - research projects. Resources include: - charts - equipment for demonstrations and experiments - reference and research materials (paper-based, digital, web-based, multimedia).
2.SC.160 The Earth and the solar system: the sun's family	01 Identify the major bodies of the solar system: sun, planets, moons 02 Compare the relative sizes of the sun and the planets, and the distances between them 03 Learn the names and sequence of the planets	Activities include: - solar system demonstrations and lessons; experiments - making charts and models of the solar system, including scale models outdoors - produce claymation videos that demonstrate interactions of planets

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	04 Explore forces acting on the planets: attraction, centrifugal and centripetal, inertia, gravity	- activities to learn names, including etymology and spelling - going out, excursions and guest speakers e.g., planetarium, observatory - research projects e.g., individual planets, the moon, the story of Pluto to explore the definition of a planet, comparing planets, other bodies in the solar system such as asteroids and comets, Earth as the 'Goldilocks' planet, crystals. Resources include: - sun and solar system charts and models - equipment for demonstrations and experiments - reference and research materials (paper-based, digita) - video editing software (e.g., Adobe Premiere Elements)
2.SC.170 The formation of the earth	01 Build knowledge of the geological development of the earth e.g., cooling of the earth, the settling of heavier and lighter substances 02 Explore the changing of matter during the formation of the earth: _ the cosmic dance: hot air rises _ the time of the volcanoes: matter changing state _ *the Sun's beautiful daughter*: erosion, evaporation, crystallisation 03 Explore the formation of the layers of the earth: _ weight/density _ barysphere (core and mantle) _ lithosphere (crust) _ hydrosphere _ atmosphere 04 Consider how the surface of the earth (*the mineral kingdom*) was formed: *stratification of rocks, formation of mountains, folds and fractures, types of rocks*	Activities include: - demonstrations and experiments e.g., how different solids and liquids settle according to weight; how the Earth's surface folds and fractures - independent work with experiments and charts - making simple models e.g., of the earth and its layers, rock strata, folds and fractures; labelling models - produce claymation videos that demonstrate formation of the earth - collecting different types of rocks; identifying strata, evidence of volcanoes, mountains, folds and fractures in the environment - going out, excursions and guest speakers - research projects. Resources include: - charts e.g., cosmic dance (cooling of the earth), the sun, the time of the volcanoes, the sun's beautiful daughter, solar system, layers of the earth - equipment for demonstrations and experiments - reference and research materials (paper-based, digita). - video editing software (e.g., Adobe Premiere Elements
2.SC.180 Geography: first classification	01 Review the layers of the earth: _ barysphere (core and mantle) _ lithosphere (crust) _ hydrosphere	Activities include: - demonstrations and model-making of features; building definitions

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	— atmosphere 02 Name and explore parts of the atmosphere 03 Name and define major features of the earth's surface (lithosphere): *islands, coasts, mountains, plains, valleys* 04 Name and define major features of the hydrosphere: *seas, glaciers, rivers, lakes* 05 Identify parts of volcanoes	- activities to learn names, including etymology and spelling - reading activities: sorting and matching pictures, labels and definitions; organising jumbled definitions, booklets - identifying features in the environment e.g., islands, coasts, mountains, volcanoes, plains, valleys, rivers, lakes - finding features on maps e.g., world map, map of Australia - making maps, charts, models and booklets - going out and excursions e.g., museums, features in the environment - guest speakers - research projects. Resources include: - equipment for making models - card material: diagrams, labels, definitions, booklets - layers of the earth chart - geography charts, photographs and maps - map-making equipment - reference and research materials (paper-based, digital, web-based, multimedia).
2.SC.190 Solar energy and the Earth	01 Build knowledge of the effects of sun on the Earth: — sunlight absorbed and stored by the earth; visible and invisible heat — the rays of the sun falling on the earth at different angles (perpendicular and oblique) — the sun and the atmosphere: the blanket of the earth, rain (evaporation and condensation), the formation of wind (air takes up space, air and water, warm air expands and rises, cold air sinks, air currents), air pressure (high, low); heating and cooling (timing)	Activities include: - demonstrations using charts, models and card material e.g., globe and light bulb; representations of sun's rays falling on earth; using candle, incense and balloon to demonstrate how heat is stored and dispersed and warm air rises and expands; game of air - activities to learn names, including etymology and spelling - independent work with models - produce claymation videos that demonstrate effects of Sun on Earth - keeping records; making charts, models and booklets - going out and excursions e.g., museums, observation in the environment - guest speakers - research projects. Resources include: - geography charts, photographs, models - equipment for making models - moveable card material: diagrams, labels, definitions; booklets - reference and research materials (paper-based, digital)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- video editing software (e.g., Adobe Premiere Elements)
2.SC.200 Movement of the Earth	01 Build knowledge of the effects of the movement of the earth — the revolution of the Earth around the sun — the rotation of the Earth tilted on its axis — night and day; hottest and coldest parts of the day — time zones: longitude — seasons, solstices, equinoxes — calendars and leap years — latitude and the five parallels: Equator, Tropics of Cancer and Capricorn, Arctic and Antarctic circles — the zones of the earth — climate types	Activities include: - demonstrations using charts, models and card material e.g., globe and light bulb; what would happen if the earth did not rotate: - activities to learn names, including etymology and spelling - independent work with models - produce claymation videos that demonstrate interactions of the Earth and the Sun - keeping records; making charts, models, maps and booklets - going out and excursions e.g., museums, observation in the environment - guest speakers - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects e.g., comparing Australia's time with time in other parts of the world, daylight saving time. Resources include: - equipment for making models - card material: diagrams, labels, definitions, booklets - sun and earth charts; time zone charts - photographs - reference and research materials (paper-based, digital) - video editing software (e.g., Adobe Premiere Elements
2.SC.210 Seasons and weather: first knowledge	01 Undertake simple atmospheric experiments: — observe weather from season to season — measure weather elements e.g., rain, temperature, air pressure, wind speed 02 Build understanding of types of weather, and their causes, in relation to the seasons, locations and climates 03 Build an understanding of the different ways in which cultural groups describe season and weather events	Activities include: - demonstrations and models - daily observation and record-keeping - organising data on graphs or charts - going out, excursions and guest speakers - collecting data and information through observation and research activities for interpretation and drawing conclusions - research projects. Resources include: - weather observation equipment - observation and record-keeping charts - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Biology and Ecology		
2.SC.220 The coming of life	01 Explore ways of understanding the coming of life on earth (Precambrian era): the work of the sun, air, water and rocks; the cleaning of the oceans by the protozoa, the sponges and the corals 02 Build understanding of the geological time scale 03 Using the five kingdoms of life as a guide/scaffold for thinking about the evolution of life	Activities include: - great story: the coming of life - clock of eras presentation and activities - etymology lessons for the names of the eras - from the clock of eras to the timeline of eras - activities to explore non-living/living; live/dead; the five kingdoms of life) e.g., sorting activities, research in the environment, discussions - making timelines, charts and models, artwork, claymation videos - student presentations, discussions, debates (e.g., between the sun, air, water, rocks and tiny creatures), factual and creative writing, drama - research projects e.g., creation stories from different times and places used to explain the coming of humans to the earth. Resources include: - clock of eras - timeline of eras - card material - reference and research materials (paper-based, digital, web-based, multimedia).
2.SC.230 The evolution of life	01 Build understanding of the evolution of life on earth: — eras: Palaeozoic, Mesozoic, Cenozoic, Neozoic — ages: trilobites/invertebrates, sea lilies, fish, amphibians, carboniferous period, reptiles (Triassic and Jurassic), flowers, birds and giant, then smaller, mammals 02 Build understanding of the links between the evolution of life and the changing surface and climate of the earth e.g., volcanoes, ice ages, changes in continents and oceans 03 Build understanding of the expanses of time before and after the arrival of life on earth 04 Build understanding of the evolutionary time scale 05 Consider questions such as: — how over time plants and animals evolved more effective ways to care for and protect their young	Activities include: - showing the transition from the clock of eras to the timeline of life - the timeline of life initial presentation and stories of each era and exercises - etymology lessons for terms on the timeline - exploring the symbols in the timeline: ice ages, continent maps, mountains, red lines - working with manipulable symbols and pictures of plants and animals on the blank timeline - making timelines, charts and models, artwork - student presentations, discussions, debates, factual and creative writing, drama - research projects e.g., movement of tectonic plates, volcanoes and ice ages, the rise and fall of different life forms, study of a particular era or age, fossils, making evolutionary timelines for particular plants and/or animals. Resources include: - timelines, manipulable pictures and labels, charts, models - reference and research materials (paper-based, digital)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– how a relatively small creature without sharp teeth or claws, with no scales nor fur, who cared not only for their own young, but for others, could become so influential on the earth	- video editing software (e.g., Adobe Premiere Elements)
2.SC.240 The plant kingdom: kinds, parts, functions	01 Observe and name the parts of plants: *leaf, root, stem, flower, fruit, seed* 02 Understand the basic needs of plants 03 Recognise, name and describe plants of different types in the local environment 04 Build awareness of the relations between plants and humans e.g., useful, harmful 05 Build first knowledge of a simple plant classification system: non-vascular and vascular, without and with seeds, non-flowering and flowering 06 Compare fungi and plants 07 Discover links between the system for plant classification and the evolution of plants 08 Build a first knowledge of the functions of the parts of plants e.g., plants and the nitrogen cycle, plants and the water cycle, roots and erosion, the leaf as a food factory/photosynthesis/making oxygen 09 Explore variations in the parts of plants: *types of leaves, roots, stems, flowers, fruits, and seeds*	Activities include: - growing plants, gardening, caring for indoor plants - demonstrations and experiments - dissecting plants and labelling parts - drawing and recording - making models, charts and booklets - building definitions - *first knowledge of the plant kingdom* reading and sorting games and exercises - introduction to classification activity: sorting everyday objects by colour, material, shape, etc. - first classification of the plant kingdom: lessons, exercises, independent work - needs and functions of plants: demonstrations, experiments, independent work - classification of the parts of plants: demonstrations, experiments, observation, independent work - going out, excursions and guest speakers, Bush Care projects - botanical drawing - research projects e.g., one particular plant, the plants in a particular place such as the backyard, the park, a gully, a creek - photographing plants and parts of plants with a digital camera for a photobook Resources include: - first knowledge of the plant kingdom 'Who am I?' pictures, labels, descriptions, question cards - first classification of the plant kingdom demonstrations and exercises the timeline of life - botany charts: needs of the plant - botany charts: leaf, root, stem, flower, fruit, seeds - classification material: pictures, labels, cards, definitions, booklets - plant specimens - reference and research materials (paper-based, digital, web-based, multimedia). - digital camera

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.SC.250 The animal kingdom: kinds, parts, functions	01 Observe and build knowledge of a variety of animals 02 Build first knowledge of Australian animals (native, domestic and exotic/feral), particularly in the local environment 03 Build awareness of the relationships between animals and humans e.g., useful, harmful 04 Identify the external parts of vertebrates 05 Gain understanding of the classification of animals: *monera, invertebrates, vertebrates* 06 Build a first knowledge of the five classes of vertebrates 07 Build first knowledge of the functions of internal parts of vertebrates 08 Build first knowledge of the external and internal parts of invertebrates 09 Discover links between the system for animal classification and the evolution of animals	Activities include: - caring for classroom pets - demonstrations - drawing and recording - making models, charts and booklets - first knowledge of the animal kingdom reading and sorting games and exercises - introduction to classification activity: sorting everyday objects by colour, material, shape, etc. - first classification of the animal kingdom demonstrations and exercises - demonstrations, lessons, observations, reading and labelling games to explore the external and internal parts of vertebrates and invertebrates - going out, excursions and guest speakers - student presentations, factual and creative writing - research projects e.g., particular animals, animals living in a particular place such as the backyard, a rock pool, a farm. Resources include: - first knowledge of the animal kingdom '*Who am I?*' pictures, labels, descriptions, question cards - first classification of the animal kingdom charts and card material - external and internal parts of animals pictures, labels, cards, booklets and definitions - the timeline of life - live animals - reference and research materials (paper-based, digital, web-based, multimedia).
2.SC.260 The vital functions of living things	01 Develop language to discuss the vital functions of living beings: *element, atom, molecule, cell, photosynthesis* 02 Compare vital functions of different classes of plants and animals including: — preserving life/building new cells: respiration, nutrition, circulation — preserving life/relating to the outside: support/skeleton, sensation, movement — preserving the species: reproduction, protection of the young	Activities include: - comparative study of vital functions story, demonstrations, activities - reading, labelling and sorting activities - building an array of moveable material to compare vital functions - going out, excursions and guest speakers - student presentations, factual and creative writing - research projects. Resources include: - vital functions card material and chart - all materials for exploring the kinds, parts and functions of living things

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- reference and research materials (paper-based, digital, web-based, multimedia).

History and Social Sciences Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Time		
3.HS.010 Time: extension	01 Complete, review, consolidate and extend knowledge of time covered in curriculum for children aged from six to nine years: – hours, minutes, seconds – telling the time: analogue/digital; 12-hour/24-hour – days, weeks, months, years – decades, centuries, eras 02 Review knowledge of links between passage of time and the revolution and rotation of the Earth: – am/pm – time zones – seasons	Activities include: - activities to consolidate ability to keep track of and record the passing of time covered in the six to nine curriculum - activities to increase automaticity, speed and accuracy with telling, reading and recording the time using a variety of time-keeping methods - activities to build skills in reading a range of different types of timetables and itineraries - activities to build skills with using knowledge of time to plan and record work, experiences, experiments, field trips e.g., work diaries, project timelines, journals - grace and courtesy lessons and discussions to consider planning and punctuality - designing timelines for different time scales e.g., hours, days, weeks, months, years, decades, centuries, eras - developing and posing questions for investigations - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects related to time e.g., the relation between time and space, use of time in navigation and astronomy, researching and building models of different time-keeping devices. Resources include: - watches and clocks - journals and diaries - materials in the environment - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.HS.020 The great fable of evolution	01 Explore what the unfolding history of evolution has to teach us: – as species grow more abundant and powerful, they do not necessarily increase in intelligence – less powerful species that are more adaptable and/or intelligent, and with the strongest instinct to protect others, survive the difficult times – Identify significant evolutionary transitions: – from water to land (plants): algae, lichen, roots for water, leaves for food from sunlight, forests to make oxygen, development of pollen/fruit/flowers – from water to land (animals): gills to lungs, fins to legs, amphibians to reptiles to birds and mammals with feathers and fur, societies of insects – from small to large needing support (shell to exoskeleton to skeleton with spinal column) – enlargement at top of spinal column to brain – development of senses and circulation system with a heart e.g., fish	Activities include: - the timeline of life (2nd level) presentation and discussion - model-making, artwork, spoken presentations, debates, factual and creative writing, drama - developing and posing questions for investigations - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., the rise and fall of different life forms, study of a particular era or age, Charles Darwin, the Wallace line, the evolution of particular plants and/or animals. Resources include: - the timeline of life - manipulable pictures and labels, charts, models - reference and research materials (paper-based, digital, web-based, multimedia).
3.HS.030 The significance of the coming of humans	01 Review, consolidate and extend the overview of human history covered in the curriculum for children from six to nine years 02 Extend exploration of the relation between geology, climate and the development of early humans and their societies (glacial and interglacial periods) 03 Identify distinguishing human features: – erect posture, free hands and opposable thumbs, language, small teeth, developed brain – can only be human if they live in a human community – ability to reflect on the past (ie study history) and to work for the future – a conscience ie the ability to love, be concerned for and work for others, even those they might never meet 04 Compare evolution of specialised organs in animals to adapt to particular	Activities include: - review and extension of the great story: the significance of the coming of humans - building a framework for studying the activities and achievements of human communities from early humans to the present - collaboratively discussing the significance and role of humans on the Earth e.g., comparing natural phenomena and human structures and accomplishments; the responsibility of humans to use resources sustainably and to care for plant and animal life; ways humans can work with the environment in harmony with nature - *going out*, excursions and guest speakers - making timelines, charts and models, artwork - spoken presentations, debates, factual and creative writing, drama - developing and posing questions for investigations

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	environments and the evolution of specialised activities in humans to adapt to many environments (forest, plain, coast, mountain, river, valley; cold, temperate, hot) 05 Trace the evolution and development of early humans in more detail: Australopithecus, *homo habilis*, *homo erectus*, Neanderthal, Cro-Magnon and modern humans 06 Build an overview of human history from the Palaeolithic to the present 07 Trace the evolution and development of human activities: tools, fire, art, clothing, hunting and gathering, shelter, settlement and farming 08 Discuss the responsibilities that come with the expansion of human knowledge and power over the earth and the recognition that all non-living and living phenomena are interdependent	- analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., the evolution of the human hand, primates (society, tool use, communication), human origins in Africa, early tools and discoveries, what it means for humans to live sustainably, the custodial responsibilities of Aboriginal and Torres Strait Islanders for Country/Place and how this influences views of sustainability. Resources include: - fundamental needs of humans charts 1, 2 - timeline of humans - timeline of the hand - timeline of inventions - chart of interdependencies - card material - reference and research materials (paper-based, digital, web-based, multimedia).
3.HS.040 Society and civilization (2nd level)	01 Explore the rise and fall of human civilisations 02 Consider questions raised by the study of human history, including: — *What is history?* e.g., people and events of the past; both joy and sorrow — *What do we study when we study history?* e.g., change and how it affects people — *What do historians use for evidence?* e.g., objects, graphic and written records — *Why do we read and write biographies?* e.g., to learn about people who shaped the past and influence the present — *Why do we study history?* e.g., to understand how the past shapes the present and influences the future; to understand our country and our world — Consider questions raised by the study of each human civilisation, including:	Activities include: - presentations: *time line of civilisations (2nd level); three phases of history*; using the *history question* charts to guide/scaffold research into different civilisations - making timelines of particular civilisations, charts and models, artwork - student presentations, collaborative discussions and debates, factual and creative writing, drama - *going out*, excursions and guest speakers - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., in-depth study of one society or civilisation past or present. Resources include: - fundamental needs of humans charts 1 and 2, and card material - timeline of millennia - timeline of civilisations (from 4,000 BC)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– *Why did the civilisation* thrive in that location? e.g., temperate climate, near a body of water, fertile soil – Why did the civilisation fall? e.g., natural disaster, famine and disease, poor use of resources, climate change, conflict and corruption 03 Use the *history question* charts to guide/scaffold the study of a society or civilisation: – environment – tools and activities – culture – relations between people within the society and with other societies 04 Recoginse that Aboriginal and Torres Strait Islander peoples are connected to the oldest continuing cultures on the planet 05 Explore the civilisation and culture of Aboriginal and Torres Strait Islander peoples 06 Explore great civilisations of the past including the civilisations of the Pacific, India, China, the Americas (Inuit, native American, Mayan, Toltec, Inca, Aztec, Olmec) Mesopotamia (Sumeria, Babylon, Assyria), Egypt, Phoenician, Hebrew, Persian, Greek, Roman	- timeline of First Peoples of Australia - history question charts - people of different zones chart - artefacts - reference and research materials (paper-based, digital, web-based, multimedia).
3.HS.050 Migration	01 Study the movement of humans across the globe over time 02 Explore the impact of migration on human history	Activities include: - demonstrations and lessons; three phases of history, migration charts - making charts and maps of the migration of particular peoples, artwork and models - student presentations, collaborative discussions and debates, factual and creative writing, drama - going out, excursions and guest speakers e.g., Aboriginal and Torres Strait Islander language speakers, members of different communities, museum visits - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- research project on the journey of a world navigator, explorer or trader prior to the late 18th century - research projects e.g., migration to the Australian continent/Oceania region at different times in history Resources include: - fundamental needs of humans charts 1 and 2, and card material - timeline of millennia - timeline of civilisations (from 4,000BC) - history question charts - migration charts - reference and research materials (paper-based, digital, web-based, multimedia).
The study of Australia		
3.HS.060 Australian political geography	01 Review, consolidate and extend knowledge of Australia's political geography: _ states, capitals and borders _ region and neighbours _ emblems and symbols _ money, stamps 02 Explore relationships between Australia's physical geography and political geography	Activities include: - demonstrations and lessons - going out, excursions and guest speakers - making maps, posters, charts, graphs, artwork and models - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions. - research projects, student presentations, factual and creative writing. Resources include - maps, models, photographs - reference and research materials (paper-based, digital, web-based, multimedia).
3.HS.070 Australian economic & cultural geography	01 Review, consolidate and extend knowledge of how Australians have met their spiritual needs, past and present: _ culture/arts _ religion _ adornment/decoration 02 Review, consolidate and extend knowledge of how Australians have used, valued and managed natural resources from the mineral, plant and animal kingdoms to meet their material needs, past and present: food, clothing, housing, transport, defence	Activities include: - demonstrations and lessons - going out, excursions, conducting interviews, writing letters, listening to guest speakers - making maps, posters, charts, graphs, artwork and models - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	03 Build knowledge of human impact on the changing nature of Australian environments, including that of Aboriginal and Torres Strait Islander Peoples, e.g., vegetation clearance, fencing, urban/settlement development 04 Build knowledge of natural, human and capital resources currently used within Australia and its local communities, and how their uses can be extended for future generations 05 Build knowledge of how Australians have used, valued and managed natural resources to build infrastructure and industry: – roads and railways – tunnels and passes – harbours and ports – waterways and dams – agriculture – mining and energy – manufacturing 06 Build knowledge of Australia's connections with other countries and the influences on economic relationships. For example, migrations, tourism, aid, migration, education and defence. 07 Design and make goods using Australian natural resources	- research projects, student presentations, factual and creative writing - propose personal and/or collective action in response to an issue or challenge, and predict the probable effects - individual and group projects in which students design and make goods using natural resources. Resources include - economic geography card materials - artefacts and natural materials - resources materials - natural (water, coal, wheat), human (workers, business owners, designing, making, thinking) and capital (tools, machines, technologies) - maps, models, photographs - reference and research materials (paper-based, digital, web-based, multimedia).
The study of the world		
3.HS.080 Study of countries other than Australia	01 Review, consolidate and extend knowledge of other continents and their countries: *location, capital flag, adjacent seas, location in relation to Australia.* 02 Build knowledge and understanding of other countries in the world, using the following headings as a guide/scaffold: – position on the earth – physical geography – political geography – economic geography – cultural geography	Activities include: - demonstrations and lessons - going out, excursions, conducting interviews, writing letters, listening to guest speakers - making maps, posters, charts, graphs, artwork and models - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., studying one country in depth; comparing two or more contrasting or similar countries using one or more headings

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- student presentations, factual and creative writing. Resources include - economic geography card materials - artefacts and natural materials - maps, models, photographs - reference and research materials (paper-based, digital, web-based, multimedia).
3.HS.090 Study of the United Nations	01 Build knowledge and understanding of the United Nations, its structure, its agencies and the work of the UN in aid work, food security, development, emergency relief and peace-keeping 02 Build knowledge and understanding of other international organisations, both government and non-government, in fields such as aid and development, trade, culture, defence and sport 03 Consider relations between nations: – world powers – developed and developing nations – treaties (bilateral, multilateral, international) – effects of one nation's actions on other nations	Activities include: - demonstrations and lessons - going out, excursions, conducting interviews and guest speakers - making maps, posters, charts, graphs, artwork and models - propose personal and/or collective action in response to an issue or challenge, and predict the probable effects - debates and collaborative discussions - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., studying one or more agencies or organisations in depth (e.g., Commonwealth of Nations, Pacific Islands Forum, ASEAN, EU); compare and evaluate two or more organisations that work in the same field; find out how children in developing nations meet their fundamental needs - student presentations, factual and creative writing. Resources include - reference and research materials (paper-based, digital, web-based, multimedia).
The study of Australian history and society		
3.HS.100 Australian history	01 Review, consolidate and extend knowledge of the pre-history, history and achievements of First Peoples of Australia on the Australian continent and in the Torres Strait Islands, and the importance of Country/Place	Activities include: - demonstrations, lessons, activities and exercises to introduce topics - making timelines of Aboriginal and Torres Strait Islander peoples in Australia, Australia since European settlement, Australia since Federation - exploring language diversity of Aboriginal and Torres Strait Islander people, archaeological

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	02 Extend knowledge of key periods, events and people in Australian history, and their significance, locally and nationally: – Aboriginal and Torres Strait Islander people (pre-contact, first contact, since European settlement) – European voyages of discovery – First Fleet and the reasons for the journey – early contact between Europeans and First Peoples of Australia – early settlement: European/British, non-European settlers e.g., Afghan, Chineseolonial period: further establishment of British colonies, convicts, First Peoples of Australia, women and children, explorers, squatters, bushrangers, agriculture, migration diversity and initiatives, social, political and economic impacts caused by significant events (e.g., Pinjarra Battle, Gold Rush, Shearer's Strike, Eureka Stockade), significant individuals and groups in shaping colonies – period since Federation: world wars, the depression, post-war migration, technological change, land rights and reconciliation, Australia in the 21st century – influential and famous Australians, past and present 03 Extend knowledge of the natural resources used by Australians to meet their fundamental needs over time, as well as the impact of that use on the Australian environment	sites, fundamental needs pre- and post-contact - discussing when to use 'Acknowledgement of Country' and 'Welcome to Country' at ceremonies and events to respectfully recognise Country/Place - making models, maps, charts, graphs and artwork - activities to extend knowledge of primary sources and what counts as evidence in Australian history - experimenting with ways Australians of all cultures past and present used/use natural resources e.g., to meet spiritual needs (dot painting and using ochres, ceremonies and story-telling, making and playing musical instruments;) and material needs (making and throwing a boomerang; weaving containers with grass; making a cabbage tree hat or plaited belt, inventions such as the stump-jump plough, Coolgardie safe, Hills Hoist; gold-panning; shearing) - reading/viewing cultural works related to Australian history e.g., poetry, stories, films - explore significant days and weeks celebrated and commemorated in Australia (Australia Day, ANZAC Day, National Sorry Day) - student presentations, collaborative discussions, debates and drama; dance, singing and music-making - factual and creative writing, artwork, multimedia composition e.g., historical recounts and biographies - going out, excursions and guest speakers, including local Aboriginal and Torres Strait Islander Elders - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - research projects. Resources include: - Australian history timeline - age-appropriate Australian literature e.g., Henry Lawson, Ruth Park, Oodgeroo Noonuccal, Nadia Wheatley

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- fundamental needs of humans charts 1 and 2, and card material - timeline of millennia - timeline of First Peoples of Australia - map of Aboriginal and Torres Strait Islander peoples in Australia - timeline of civilisations (from 4,000BC) - history question charts - migration charts - economic geography card materials - artefacts and natural materials - reference and research materials (paper-based, digital, web-based, multimedia).
3.HS.110 Australian citizenship	01 Extend understanding of the responsibilities of living in a community and society: recognising diversity, co-operation, communication, leadership, rules within different social contexts 02 Link appreciation of the nation of Australia and the shared values, rights, responsibilities and privileges of Australian citizens to own actions, activities and future 03 Build knowledge of what democracy is, key values that underpin Australian democracy, and how decisions are made democratically 04 Explore democracy and citizenship experiences of Aboriginal and Torres Strait Islander People, migrants, women and children 05 Explore obligation citizens have beyond national borders as active and informed global citizens 06 Build first knowledge of the Australian Federation and Constitution: history, function, constitutional change and referenda 07 Extend knowledge of the three tiers of Australian government: local, state and Commonwealth 08 Build knowledge of how laws are made, changed, implemented and enforced (legal and judicial systems), types of laws and regulations, roles of personnel involved, impacts on the traditional laws of Aboriginal and Torres Strait Islanders	Activities include: - story of the great river - lessons and activities relating to democracy, key values, democratic decisions, the formation of rules within different social contexts, participating in community groups, participating in community projects, researching local community diversity and members/projects - lessons and activities relating to Australian citizenship: how people become Australian citizens, Australian citizenship pledge, rights and responsibilities of citizens, experiences of people migrating to Australia who take up Australian citizenship, dual citizenship - lessons and activities relating to global citizenship: human rights issues, environment and sustainability, other global issues - lessons and activities relating to the Australian Federation and Constitution, including the path to Federation; key people e.g., Henry Parkes, Edmund Barton; key events e.g., Tenterfield Oration; influencing systems e.g., United States model, Magna Carta, Westminster system, constitutional monarchy - lessons and activities relating to the three tiers of Australian government and their roles and responsibilities, making laws, social institutions e.g., hospitals and emergency services, police and courts, different types of schools - drawing, model-making, factual and creative writing, biography - collaborative discussions, debates and drama - class meetings; mock elections; mock trials; mock parliaments - dramatising the making of a law and a trial

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	09 Build knowledge of the electoral process, compulsory voting, the role of the Australian Electoral Commission, and the responsibilities of electors and representatives 10 Explore the role and structure of a range of Australian social institutions and voluntary organisations, social media groups and Aboriginal and Torres Strait Islander organisations in working toward local, regional and global issues, projects or civic goals 11 Study people who have made a significant contribution to Australian society, past and present	- *going out*, excursions and guest speakers e.g., local members (state and federal), local council members, visits to parliament (state or federal) or council chambers, visits to courts and other social institutions, contacts with voluntary organisations - propose personal and/or collective action in response to an issue or challenge, and predict the probable effects - participating in community events and community service; projects related to social justice - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects. Resources include: - the great river chart - Australian history timeline - history question charts - reference and research materials (paper-based, digital, web-based, multimedia).

Physical and Life Sciences Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
The Earth		
3.SC.120 Map reading and making	01 Review, consolidate and extend skills in compass and map reading 02 Review, consolidate and extend map-making skills 03 Review, consolidate and extend skills in drawing plans 04 Review, consolidate and extend knowledge of longitude, latitude and degrees	Activities include: - demonstrations and lessons: the story of direction - compass reading exercises and projects; making a compass - using the sky to navigate (sun and stars) - map-making exercises and projects; using and extending the map-maker's alphabet, designing keys - reading a scale and drawing to scale (How big is it? How far is it?) - drawing plans and building models of increasing complexity e.g., street maps,

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		plans of rooms and buildings, plans of models - measuring mountains and representing them on paper - reading and drawing contour lines, large scale ordinance survey maps - going out, excursions and guest speakers - developing and posing questions for investigations - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., history of cartography and navigation, mapping projects, orienteering. Resources include: - relief maps, atlas, different types of maps, street directories - different types of compasses - equipment for making maps - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.130 Australia's position on the earth	01 Review, consolidate and extend knowledge of Australia's position on the earth: — hemisphere — latitude and longitude — climate zone 02 Build knowledge of Australia as a land mass on the earth: — largest island/smallest continent — oceans and seas 03 Build knowledge of Australia's region: Oceania 04 Build knowledge of Australia's neighbours: New Zealand, New Guinea, East Timor, Indonesia, Antarctica, nations of the Pacific	Activities include: - lessons, demonstrations and collaborative discussions - *going out*, excursions and guest speakers - making maps, posters, artwork, models, charts and booklets - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects, student presentations, factual and creative writing. Resources include - maps and models - - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.140 Australian physical geography	01 Review, consolidate and extend knowledge of Australia's physical geography: — coastline: seas, coasts — land and water forms: islands/lakes, peninsulas/gulfs, straits/isthmuses; capes/bays; archipelagos/chains of lakes	Activities include: - demonstrations and lessons - going out, excursions and guest speakers - making maps, posters, charts, graphs, artwork and models - developing and posing questions for investigations

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– high country: mountains, ranges, tablelands – low country: valleys, plains – inland water: rivers (origins and systems), lakes	- analysing perspectives and viewpoints regarding actions, events, issues and phenomena - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects, student presentations, factual and creative writing. Resources include - maps, models, photographs - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.150 Universe, solar system and the earth: 2nd level	01 Review, consolidate and extend knowledge of the formation of the universe and solar system covered in the curriculum for six- to nine-year-olds, including: – forces that shape the universe: attraction, centrifugal and centripetal, inertia, gravity, friction – the structure of matter: atoms and molecules; elements and compounds; mixtures, suspensions and solutions; structure of crystals – types of energy: solar, kinetic, mechanical, chemical, nuclear, and their production – transfer of energy e.g. heat to mechanical energy – magnetism and electricity 02 Review, consolidate and extend knowledge of the Solar System covered in the curriculum for six- to nine-year-olds, including: – the sun and other stars – the relative size of the earth in the Universe and Solar System – the Sun's family: planets, moons, asteroids, comets 03 Review, consolidate and extend knowledge of the formation of the earth covered in the curriculum for six- to nine-year-olds, including: – cooling of the earth – formation of the oceans – erosion – three states of matter; density – composition and layers of the earth – tectonic plates; continental drift – volcanoes and earthquakes	Activities include: - demonstrations and lessons with charts, models and experiments - going out, excursions and guest speakers - observations and record-keeping - growing crystals, making rocks - independent research projects - artwork, making models and charts, drama - making simple machines and circuits - student presentations - factual and creative writing - study of electronics and electrical circuits Resources include: - geography charts - equipment for demonstrations and experiments - Snap-On Electricity kits - reference and research materials (paper-based, digital, web-based, multimedia).

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	04 Review, consolidate and extend knowledge of the surface of the earth (lithosphere; *the mineral kingdom*) covered in the curriculum for six- to nine-year-olds, including: – stratification of rocks – mountain building: folding, faults, fractures – classification of rocks, crystals and gems	
3.SC.160 Solar energy and the Earth: 2nd level	01 Review, consolidate and extend knowledge of the effects of the sun on the earth covered in the curriculum for children aged from six to nine years, including: – sunlight absorbed, stored and dispersed by the earth – the rays of the sun falling on the earth at different angles (perpendicular and oblique) – the effect of the atmosphere on the sun's rays	Activities include: - demonstrations and lessons with charts, models and experiments - *going out*, excursions and guest speakers - independent research projects - observations and record-keeping - artwork, making models and charts, drama - student presentations - factual and creative writing. Resources include: - geography charts - equipment for demonstrations and experiments - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.170 Movement of the earth: 2nd level	01 Review, consolidate and extend knowledge of the effects of the movement of the earth covered in the curriculum for children aged from six to nine years, including: – the revolution of the Earth around the sun – the rotation of the Earth tilted on its axis – night and day; hottest and coldest parts of the day – time zones: longitude – seasons – latitude and the five parallels: Equator, Tropics of Cancer and Capricorn, Arctic and Antarctic circles – temperature zones and climate	Activities include: - demonstrations and lessons with charts, models and experiments - going out, excursions and guest speakers - independent research projects - observations and record-keeping - artwork, making models and charts, drama - student presentations - factual and creative writing. Resources include: - geography charts - equipment for demonstrations and experiments - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.180 The work of air: atmosphere and wind	01 Build knowledge and understanding of atmospheric phenomena, including: – air pressure – how wind is formed and wind systems – sea and land breezes – the effect of the atmosphere on the earth's temperature – planetary winds	Activities include: - demonstrations and lessons with charts, models and experiments - *going out*, excursions and guest speakers - independent research projects - observations and record-keeping - artwork, making models and charts, drama - student presentations - factual and creative writing. Resources include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	02 Build knowledge and understanding of the work of the wind, including: – planetary winds and ocean currents – how waves are formed – wind erosion	- geography charts, including *work of the air* charts - card material - equipment for demonstrations and experiments - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.190 The work of water	– Build knowledge and understanding of the work of water, including: – how rain is formed – clouds – snow and hail – dew, frost and fog – rivers: the origin of rivers, the life of a river, waterfalls, river mouth; rivers of the world; actions of a river – caves: stalactites and stalagmites – water erosion – valleys and canyons – plains – formation of earth pillars – lakes; underground water – destruction of rocks – the work of ice: freezing and thawing – glaciers, glacial valleys, moraines – the water cycle – water and plants – advanced land and water forms: channel, strait, canal; cape, isthmus, peninsula; promontory, spit; bay, cove, fjord, gulf, lagoon; cliff, hill, mesa, mountain, plain, plateau	Activities include: - demonstrations and lessons with charts, models and experiments - observing and recording temperature, rain and wind direction; graphing temperature - reading and making weather maps - making snowflakes, clouds - making a model of a river - artwork, making models and charts, drama - student presentations - factual and creative writing - *going out*, excursions and guest speakers - independent research projects. Resources include: - geography charts, including *work of the water* charts, including river and erosion charts, water cycle and weather charts - card material - equipment for demonstrations and experiments - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.200 Cultural & economic geography: the work of humans	01 Review, consolidate and extend knowledge of economic geography covered in the curriculum for children aged from six to nine, including: – interdependency of all humans – natural resources: non-renewable and renewable – Influence of environments in determining human settlements – human and capital resources – production and consumption; cost of living – businesses: providing goods and services; not-for-profit and for-profit; primary, secondary and tertiary industries – opportunity cost and the choice between alternative resources and trade-offs	Activities include: - demonstrations and lessons with charts and models e.g., great river, chart of interdependencies - going out, excursions and guest speakers - developing and posing questions for investigations - analysing perspectives and viewpoints regarding actions, events, issues and phenomena - propose personal and/or collective action in response to an issue or challenge, and predict the probable effects - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - independent research projects - making models, charts, timelines and graphs

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	– imports and exports – movement of products: world trade; balance of trade – influences on consumer choices – strategies to make informed consumer and financial choices – movement of peoples: migration, refugees 02 Build knowledge of current social and economic problems and opportunities, for example: – poverty and unemployment – social and economic reform – new and emerging technologies; the effects of technological change – global communication – resources: non-renewable, renewable, waste, sustainability – material needs and wants, and how these are impacted by limited resources – individual, broader community and environmental impacts of settlements, consumer and financial decisions, natural disasters 03 Undertake an enterprise: design, make and market a product 04 Study in detail a person, past or present, whose life's work has been significant or influential	- student presentations, debates and dramatic performances - factual and creative writing, biography - designing, making and marketing a product - community service. Resources include: - chart of interdependencies - economic geography card material - the great river chart - maps and graphs - project timeline - reference and research materials (paper-based, digital, web-based, multimedia).
Biology and Ecology		
3.SC.210 The plant kingdom: botany	01 Review, consolidate and extend knowledge of classification, parts and functions of plants 02 Explore and build understanding of the vital functions of plants: – preserving life/building new cells: needs of plants, nutrition, transforming non-living to living, plants and water, roots and their growth, circulation of nutrients and water, transpiration, plants and the sun – preserving life/relating to the outside: plant sensitivity to light, water, gravity and heat; ways plants 'travel', how plants attach themselves – preserving the species: ways plants reproduce; ways seeds travel	Activities include: - applying knowledge of plants (classification, parts, functions) to gardening and horticulture experiments and projects - demonstrations and experiments exploring the functions of plants in more detail - building layouts with card material - dissecting plants, labelling parts, recording - botanical drawing and diagrams - making models, charts and booklets - building definitions - *going out*, excursions and guest speakers e.g., botanic gardens, herbarium, farm - student presentations, drama - factual and creative writing - developing and posing questions for investigations

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	03 Extend knowledge of plant evolution and adaptation 04 Understand the importance of plants in the web of life (ecology): providing food and oxygen, preventing erosion 05 Respect and value the gifts plants give humans: converting the sun's energy into food, restoring and protecting the atmosphere and soil, shade, material for building, clothing and heating, beauty, renewable resource	- using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., plants in zones/ regions of the earth (arid, temperate, tropical, rainforest, savannah, arctic) - special projects including bush care and bush regeneration, building a vegetable or native garden, building a terrarium, growing and preserving fruit, flowers or grains/seeds, preparing meals with own produce. Resources include: - botany charts, card material, pictures, labels, definitions and booklets (classification, parts and function) - *vital functions* card material and charts - plant specimens - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.220 The chemistry of the plant	01 Review knowledge of the three kingdoms of nature (mineral, plant and animal) and the needs of plants 02 Build first knowledge of chemistry: — the formula and structure of a molecule — the alphabet of the universe (periodic table) 03 Apply knowledge of chemistry to plants and their functions: — making food (from minerals to proteins) — nitrogen cycle — photosynthesis	Activities include: - demonstrations and lessons with charts and specimens - building molecules with concrete material and notating the formulae - exploring the elements of the periodic table, their characteristics and ways of combining into molecules - applying knowledge of chemistry to the notation of chemical processes relevant to plants - building definitions and formulae - *going out*, excursions and guest speakers - student presentations, drama - factual and creative writing - developing and posing questions for investigations - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., the carbon cycle and climate change. Resources include: - *vital functions* card material and chart - *periodic table* chart and card material - plant specimens - microscope - manipulable concrete material for constructing models of molecules - dissecting and drawing equipment

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.230 The animal kingdom: Zoology	01 Review, consolidate and extend knowledge of classification, parts and functions of animals: — invertebrates: porifera, coelenterates, worms, molluscs, arthropods, echinoderms, cephalochordates and chordates — vertebrates 02 Review, consolidate and extend knowledge of the vital functions of animals: — review the vital functions of animals — preserving life/building new cells: respiration, nutrition, circulation — preserving life/relating to the outside: locomotion, sensation — preserving the species: reproduction, protection of young 03 Trace the evolution of each vital function, and the development of specialist organs, from protozoa to mammal 04 Understand the importance of animals in the web of life (ecology): food chain, roles in different environments, biodiversity 05 Respect and value the gifts animals give humans: fertilise the soil, food, companionship, beauty	Activities include: - applying knowledge of animals (classification, parts, functions) to the care and wellbeing of animals - observation to explore the functions of animals in more detail - building layouts with card material - learning how to dissect animals or animal parts (invertebrates, fish, frog, chicken, rat, ox heart), labelling parts and recording - drawing and diagrams - making models, timelines, charts and booklets - building definitions - going out, excursions and guest speakers e.g., zoo, farm, veterinary clinic - student presentations, drama - factual and creative writing - developing and posing questions for investigations - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., animals in a particular zone or region of the earth (arid, temperate, tropical, rainforest, savannah, arctic) - special projects including care of pets and native animals, organisations concerned with the welfare of animals (WIRES, RSPCA, animal refuge), protected endangered species, keeping domestic animals for food or clothing, spinning wool from different mammals. Resources include: - zoology charts, card material, pictures, labels, definitions and booklets (classification, parts and function) - timeline of life - *vital functions* card material and chart - live animal (if humane) - dissecting and drawing equipment - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.240	01 Expand knowledge of the plant and animal kingdoms to cover the five kingdoms of life:	Activities include:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Chinese boxes and Tree of Life	– monera – protista – fungi – plant – animal 02 Build knowledge of cells: types and parts 03 Study a plant in detail 04 Study an animal in detail 05 Consolidate and extend knowledge of ecology and ecosystems, including: – water, carbon and nitrogen cycles – ecosystems: interrelations between light, heat, humidity, soil quality – food chains and food webs – environmental threats and opportunities: pollution, climate change, sustainability, biodiversity, human management and influences	- demonstrations and building layouts with card material - activities and exercises with *Chinese Boxes* card material and charts - linking Chinese Boxes to Tree of Life - activities and exercises *Tree of Life* card material and charts - observations and experiments - using a microscope - drawing and diagrams, labelling parts - making models, charts and booklets - *going out*, excursions and guest speakers - student presentations, drama - factual and creative writing - developing and posing questions for investigations - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - propose personal and/or collective action in response to an issue or challenge, and predict the probable effects - detailed studies and research projects. Resources include: - *Chinese Boxes* card material and charts - *Tree of Life* card material and charts - chart of interdependencies - microscope and related equipment - reference and research materials (paper-based, digital, web-based, multimedia).
3.SC.250 Human physiology	01 Extending knowledge and understanding of the external parts of the human body and their functions 02 Building knowledge of the internal parts of the human body: – organs – systems 03 Using vital functions as a guide/scaffold for studying human physiology: – preserving life/building new cells: respiration, nutrition, circulation – preserving life/relating to the outside: locomotion, sensation – preserving the species: reproduction, protection of young 04 Apply knowledge of human physiology to healthy living and personal development	Activities include: - locating humans in the system for classifying animals - the great river: story, chart and card materials - demonstrations and experiments - drawing and diagrams, labelling parts - making models, charts and booklets - going out, excursions and guest speakers e.g., health professionals - student presentations, drama - factual and creative writing - applying knowledge of human physiology to own health and personal development e.g., nutrition, exercise, sleep, hygiene, eye health, reproductive health (including puberty and sex education), preventative health (including drug and alcohol education); the needs of human infants; first aid; life-saving awards; mental health

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- developing and posing questions for investigations - using observation, primary and secondary sources for examination, data collection, interpretation and to draw conclusions - research projects e.g., detailed study of an organ or system. Resources include: - the *great river* chart and card material - equipment for experiments - reference and research materials (paper-based, digital, web-based, multimedia).

Creative Arts

Overview

The Montessori classroom provides every child with opportunities to build knowledge, understanding and skills in all areas of the arts, including visual art, music, drama and dance. The primary goal of creative arts education is the aesthetic development of the student. In other words, this area of the curriculum nurtures the expression of creative ideas, while at the same time building knowledge and understanding of aesthetics as a discipline recognised in the wider culture to guide the development and execution of creative ideas. As with the exercises of *practical life*, creative arts activities begin with the music, art, dance and drama that is part of the culture of the country, region or community in which the school is located. Creative arts also become integrated and interrelated with other curricular areas, including language and mathematics, history and geography, as well as biology and the other sciences.

An essential ingredient in the creative process is the ability to concentrate, to immerse oneself in one's work. Children's ability to concentrate is strengthened through the use of materials and exercises offered at the moment of interest, a central component of Montessori pedagogy. Opportunities for independent work and repetition during blocks of uninterrupted time enable students to immerse themselves in creative arts projects alongside, or integrated into, their work in other areas of the curriculum.

The Montessori creative arts curriculum, as with other areas of the Montessori curriculum, are not 'worked through' in a rigid way. The curriculum is an expansive framework within which *key lessons* offer knowledge and skills needed for independent work. In creative arts the key lessons enable children to develop knowledge, understanding and appreciation, as well as the development of skills and techniques that enable then to follow their interests independently.

The Montessori approach to creativity is summarised by Dr Montessori (1965b: 289) in the following way, in this case, with reference to the teaching of visual arts:

> *To confer the gift of drawing we must create an eye that sees, a hand that that obeys, a soul that feels; and in this task the whole of life must cooperate.*

Similarly, in the context of the Montessori music curriculum, Miller (1996: 4) writes:

> *The development of perception is enhanced through all of the Montessori educational materials. The control of the body and hand is enhanced through manipulation of materials, through the arrangement of the environment so that it calls for muscular control, and through specific movement exercises. This basic control of hand and body make possible the further refinement of movement necessary for the development of techniques which are needed for creative expression … Montessori activities are designed for the 'whole child' rather than just for the head, or just for the hands or just for the emotions.*

The music curriculum includes the use of concrete materials through which children study the elements of music, including patterns of musical sound as well as musical notation and terminology. Building on this foundation, children develop knowledge and skill in composition and performance. In the same way children are given the opportunity to study the elements of visual art, language arts, drama and dance as a basis for future creative expression in these areas, In this way they build confidence in themselves as doers, thinkers and creators.

The key lessons of the creative arts curriculum, as much as possible, should be delivered by the classroom teacher. There are several reasons for using this approach. The use of specialist teachers interrupts the extended work period and can inhibit spontaneous musical, artistic, dramatic or dance projects, because children are less likely to apply knowledge gained outside the classroom, from a specialist, to their own

classroom work. Furthermore, when specialists are used, some children may feel they also must be 'a specialist' in order to undertake, for example, a simple musical project. Instead, children in Montessori classrooms are exposed to generalist teachers who exhibit confidence in undertaking any artistic study together with their students. In all this work, the purpose is to expose children to the arts, not to perfect techniques. Children whose interests are in perfecting techniques would need to pursue additional studies with private teachers. Specialist teachers, however, might at times be invited to the class to extend children's knowledge and skills in particular areas they wish to pursue in more detail or to a higher level. Specialists might also coordinate large group projects.

The creative arts curriculum outlined below covers a wide variety of strands and topics to enable children to pursue their own interests and abilities at their own pace. For this reason, curriculum documents for children aged from six to nine and for those aged from nine to twelve are the same. A lesson or presentation given at the younger level will be repeated and expanded at the older level, with the expectation that the older children will reach a higher level of achievement. As many of the elements of the content strands are interrelated, more than one area can be combined in a presentation with older children, for example, using household objects to print repeating patterns, using primary and secondary colours. This combines elements and principles of design, repetition, colour, pattern, variety, rhythm, with the technique of printing and the use of the medium of paint.

Art Appreciation

Art appreciation is an important aspect of the Montessori creative arts curriculum. By looking at the artworks of others children see how others have created unique works using a range of knowledge, skills and techniques. Children are encouraged to think about and discuss why something is painted a particular way, or the historical events that might have influenced the artist and the work. This habit of talking about art also creates a positive climate and a language for discussing their own artworks. In addition, when children explore the artwork of others, they are more able to develop their own ideas and approaches, for example, by emulating the style, technique or feelings conveyed by an artist they have studied. Montessori art appreciation card materials allow children to learn about different artists and their works independently.

Excursions and *goings out* include visiting museums and art galleries, and attending a variety of performances. Professional artists are also invited to visit the classroom, to talk about and demonstrate their works, methods and ideas. These activities widen the children's view of the creative arts and expose them to different cultures and ideas.

Visual Arts

The visual arts are integrated into the *Cosmic Education* curriculum because the natural and the human world are sources of inspiration for artistic expression, as described by Pottish-Lewis (2009:44) in the following way:

> *The first source of beauty to which a human is exposed is the earth and its inhabitants, whether organic or inorganic. … The world is filled with special kind of aesthetic wonder: beauty surrounds us in the interaction of colour, line, shape and form: the colours of a sunset, the lines of the mountain tops, the shapes and forms created by canyons and hills, the geometric patterns on the shells of snails, the variety of corolla designs. Not only can we find beauty in the natural landscape, we can see it in buildings, bridges, buttresses, and many things that are the creation of the human's inventive mind.*

In the Montessori view, educating the hand to draw and the eye to perceive and to make aesthetic judgements provides children with the skills needed to create their own visual art. Inspiration and artistic creation derive from both the development of mechanical technique and freedom of spirit. In Montessori classrooms prepared for children from six to twelve years old children participate in small and large group presentations in which they learn the basics elements and principles of the visual arts. They learn skills and techniques, and how to use a diverse array of media, as well as appreciation of artworks relevant to the skill being taught. Each skill and

technique is taught in isolation. Children are then given time to experiment with this skill alone, before creating works incorporating other skills and techniques. They are introduced to various art media and techniques in order that they may use it for their own creative expression rather than using it to duplicate someone else's creativity.

The Montessori classroom for children of this age includes an art area that is always available for the children to use. The material in the art area includes activities that isolate skills (e.g., motif design, wood carving, colour blending) and activities that allow for creativity using all the skills acquired in basic exercises. Through the exercises of practical life children are familiar with the routines involved in preparing and cleaning up art materials. Uninterrupted blocks of time allow children to complete artworks at their own pace and to their own satisfaction.

Montessori environments prepared for children aged from six to twelve have the atmosphere of a workshop. Materials for a variety of activities, including art materials, must be available at all times so that the children can integrate art activities into other activities across the spectrum of disciplines. Art activities are not organised as separate and individual activities, but in sets of related media and tools that the children must choose from according to the needs of the activity. Keeping the art materials in order requires cooperation between children and a high level of responsibility. This is very different from the self-contained activities of the *Children's House* and is a major aspect of the *practical life* of the class. There may also be an area or room designated for larger projects, projects requiring specialised equipment and cooperative art activities across levels, although this should not turn art into an activity only done in a specialty room.

Art making is frequently integrated across the curriculum, for example, in language (calligraphy, illustration), mathematics and geometry (2D and 3D design, technical drawing), the sciences (model-making, botanical drawing) and the social sciences (model-making, illustration, visual arts across time and cultures). Children's artwork is evaluated in its own right, relative to the goal of the work attempted, rather than in comparison to the work of others.

Geometry is an area of the curriculum that is intimately related to art. The Geometry materials are used for design work in a number of ways. Techniques using tools such as the compass, straight edge, protractor and ruler are shown early in the environment for six to nine year olds so that the children can do creative follow-up work with geometric design, angles, lines, shapes and both two- and three-dimensional constructions.

Handwork is an extremely important part of art activity in Montessori environments prepared for six to twelve year olds. It is connected to the 'hand that works' are of the history curriculum. The children benefit from being taught the basics of many types of handwork such as weaving, woodwork, needlework, clay, *papier-maché* and knot work, as well as work with yarn such as spinning, knitting, crocheting and dyeing. These folk traditions have had enormous significance for humanity and connect the children to their historical heritage.

In the Montessori view handwork is very important in a society that has become heavily mechanized. Dr Montessori believed that children, through handwork, stay connected to the source of human technological developments and, therefore, to their own humanity. Handwork also carries much cultural significance and can play an important part in preserving the integrity and identity of an individual culture in a world that outwardly moves towards homogenization. Folk art projects can also extend the children's understanding of other cultures and time periods and provide variety in the ways in which the children explore history and geography.

Visual arts activities also help build community. Beautifying the school, for example, can involve cooperation across age groups. The children might create displays, maintain a gallery of their work and combine efforts to bring art into every area of the school, both inside and outside, using a variety of media, e.g., a quilt or a sculpture garden.

Visual Art Curriculum for Children Aged Six to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.VA.010 3.VA.010 Introduction to Art	01 Understand the reasons humans have developed and created art	Activities include: - story of art - group discussion - independent research. Resources include: - the fundamental needs of humans' charts - timelines of humans.
Elements and Principles of Design		
2.VA.020 3.VA.020 The seven elements of design - line - shape - form - colour - value - texture - space	01 Recognise and understand the use of each design elements 02 Experiment with the use of each element in isolation 03 Analyse artworks to identify the elements 04 Create artworks using each element 05 Discuss critically and represent graphically the way elements of design are used to make an image pleasing or significant in some other way e.g., composition, unity, perspective 06 Begin generating artworks to communicate ideas	Activities include: - discussion of definitions, with examples, for each design element - review of each element - projects and activities relating to each element - integrating art with mathematics and geometry. Resources include: - art appreciation cards - prints - older children combine elements in more complex projects.
2.VA.030 3.VA.030 The seven principles of design - emphasis - balance and proportion - contrast - movement - rhythm - pattern - variety - harmony	01 Recognise and understand the use of each design principle 02 Experiment with the use of each principle in isolation 03 Analyse artworks to identify the principles 04 Create artworks using each principle 05 Discuss critically and represent graphically the way principles of design are used to make an image pleasing or significant in some other way e.g., composition, unity, perspective 06 Begin generating artworks to communicate ideas	Activities include: - group discussion of definitions, with examples of each design principle - review of each principle - projects and activities relating to each principle. Resources include: - art appreciation cards - print - older children combine elements in more complex projects.
2.VA.040 3.VA.040 Study of colour	01 Become familiar with historical colour derivation and use 02 Name, recognise and experiment with primary and secondary colours and their relationships to one another	Activities include: - the story of colour - experiments - using items from nature to derive dyes and other materials to use in art projects - independent projects around the theme of colour

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	03 Differentiate and experiment with values and hues 04 Differentiate and experiment with warm and cool colours 05 Differentiate and experiment with complementary colours 06 Reflect upon the origin of colour and its use in art through history	- independent projects exploring another design element or principle.
2.VA.050 3.VA.050 Skills and techniques, tools and media - drawing and line - collage - painting - pottery - printing - textiles - woodwork - mosaic - photography - electronic drawing tools	01 Realise what artists do, who they are and what they make 02 Discuss, and represent graphically, qualities that make an image pleasing 03 Demonstrate proper tool use, skills and technique in various media 04 Begin generating artworks to communicate ideas using a variety of skills, techniques, processes, conventions and technologies 05 Express opinions and preferences about various media and their usage	Activities include: - group discussion - independent research (e.g., works by Australian artists) - exploration and application of various media - integration with other subject areas, e. g. exploration of different cultures or historical periods,. making simple looms or making paper - school events/activities (e.g., exhibition, local competition, end of year concert, school play, book week) - excursions to art galleries, exhibitions, museums.
2.VA.060 3.VA.060 Sculpture and Ceramics - clay - papier maché - wire - recycled materials	01 Use the forms of sculpture to make artworks according to varying requirements 02 Begin to interpret the meaning of 3-D artworks 03 Experiment with and appreciate the use of particular techniques	Activities include: - group discussion - independent research (e.g., works by Australian sculptors and ceramicists) - exploration and application of various media - school events/activities (e.g., exhibition, local competition, end of year concert, school play, book week - excursions to art galleries, exhibitions, museums. Resources include: - art card materials - art reference books - timelines.
Appreciation of visual arts		
2.VA.070 3.VA.070 Art History	01 Distinguish between contrasting styles of artists on the basis of elements and principles 02 Be familiar with some of the names of famous artists	Activities include: - group discussion and activities revolving around similarities and differences of style - independent research - experimentation with creating artworks in the style of particular eras and schools

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	03 Distinguish between contrasting periods in art history 04 Discuss periods of art and express preferences using some art terminology 05 Recognise and explore different schools of art e.g., Realism, Impressionism, Cubism 06 Recognise and explore different art forms of different cultures through time	- folk art projects. Resources include: - art appreciation card materials - art history reference books - prints - art timelines.
2.VA.080 3.VA.080 Artists: life and work	01 Understand that artists create for different reasons and that various interpretations of their works are possible 02 Investigate subject matter as an attempt to represent likeness of things in the world 03 Explore the role of art in society 04 Identify connections between subject matter in artworks and what they refer to 05 Appreciate the use of particular techniques 06 Recognise that audiences respond in different ways to artworks and that there are different opinions about the value of artworks	Activities include: - group discussion - independent research, including Aboriginal, Torres Strait Islander and other Australian artists of the past and present - experimentation with creating artworks in the style of a particular artist - preparing responses, reviews and interpretations (spoken and written) to works of visual art. Resources include: - art appreciation cards - art history reference books - prints - art history timelines.
2.VA.090 3.VA.090 Folk Art	01 Experiment with techniques and media used by various peoples around the world 02 Gain appreciation for the variety of artistic expression in various cultures 03 Find links to work in history, geography and biology	Activities include a variety of activities using different types of media. Resources include: - art card materials - art reference books - prints - timelines.
2.VA.100 3.VA.100 Art projects: - drama work - and community building	01 Experiment with the building of props, scenery and the making of costumes 02 Participate in art activities that involve cooperative efforts	Art activities related to: - a school event (e.g., an exhibition, local competition, end of year concert, school play, book week) - large cooperative projects for school beautification (The children area involved in all aspects of production.).

Music

The Montessori music programme includes listening, singing, music theory and ear training, eurhythmics (movement and rhythm), composition, production of music (playing of instruments), history and literature. Children experience, learn about and explore the elements of music, including pitch, rhythm, intensity, timbre, form and style are included. Montessori music activities are based on one of the following two principles:

- isolation of difficulty, where an element of music is isolated for study
- experience of the whole, where children experience a synthesis of musical elements working together to create a whole work

Key lessons in music are given individually, and in both small and large groups. These lessons enable children to use music for self-expression and communication. The lessons are sequenced to build children's skills progressively, but they are also given in response to children's emerging interests.

Music is integrated into the Montessori curriculum. Music lessons are not presented as separate from other curriculum areas. For example, as part of their normal class work, children may research a musical instrument or a composer, practise a musical instrument (with the exception of percussion instruments that might be too disturbing) or compose a short piece of music. For this reason the music materials and activities are always available for the children to use. They are prepared so children can use them independently and with as much repetition as they need. As with other activities and exercises in the Montessori environment, music activities build concentration, perseverance, success and confidence.

Two distinctive music materials found in the Montessori environment for children aged from six to twelve are:
- the Montessori bells
- the Montessori tone bars

The Montessori bells are a tuned musical instrument specially designed for young children to explore musical pitch, and learn to recognise and match musical notes. This instrument comprises two series of matching moveable bells (diatonic and chromatic) in the C Major Scale. The accompanying manipulative materials enable the children to explore, and learn how to use, musical notation.

The Montessori tone bars are a tuned musical instrument designed for older children. This instrument comprises twenty-five moveable tone bars on a wooden keyboard spanning two octaves. Accompanying manipulative materials enable children to explore musical notation further, and to begin experimenting with musical composition.

Music Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.MU.010 Listening	01 Develop listening skills in order to enjoy music	Activities include: - listening games - guided listening activities.
2.MU.020 Percussion	01 Experience percussion instruments 02 Play percussion accompaniment to a range of music, demonstrating awareness of musical concepts, including rhythm 03 Improvise, experiment, select, combine and order sound using musical concepts 04 Compose a percussion piece	Activities include: - guided activities and games - demonstration and use of 'invented notation'. Resources include percussion instruments, both found and conventional.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.MU.030 Singing	01 Experience different types of singing (e.g., singing softly, singing the scale, singing simple melodies) 02 Sing to the accompaniment of a range of music 03 Express oneself in song including creating lyrics to a familiar piece of music	Activities include: - guided group activities and games. - group/choral singing - classroom and school productions - independent projects Resources include manuals of simple songs.
2.MU.040 Music theory with the Montessori bells	01 Understand care and use of the bells 02 Differentiate high and low sounds 03 Explore, create, select and organise sound in simple structures including matching, grading and simple melodies 04 Explore and recognise the scale 05 Name the notes of the scale 06 Explore and recognise whole steps and half steps in relation to the scale 07 Experience and use symbols to represent sounds	Resources include: - Montessori bells - Montessori music manipulatives, including card material, wooden discs, notes and clefs, staff boards, paper.
2.MU.050 Music theory with Montessori tone bars	01 Understand care and use of the tone bars 02 Experience, name and use symbols to represent sounds 03 Explore, recognise and name the degrees of the scale 04 Explore, recognise and name intervals 05 Explore, recognise and name the sequence of major scales, including sharps and flats 06 Explore, recognise and name key signatures 07 Explore the transposition of songs from one key to another	Activities include: - series of exercises with the tone bars - independent notation and composition projects. Resources include: - Montessori tone bars - card materials - notation sheets.
2.MU.060 Movement - for control - for expression	01 Develop controlled movement to assist in acquiring musical skills 02 Move to a range of music demonstrating awareness of musical concepts 03 Experience and participate in combining music with drama	Activities include: - *walking* on the line - musical movement games - classroom and school performances - excursions.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.MU.070 Rhythm	01 Experience rhythm as clapping and chanting 02 Experience rhythm as written note patterns 03 Recognise rhythmic patterns in music 04 Read and write note patterns	Activities include: - rhythm games - group discussions Resources include: - card materials - clapping charts - recordings - Montessori music manipulatives
Music appreciation		
2.MU.080 Music history and literature	01 Recognise and explain different musical eras (e.g., in the Western classical tradition) and traditions of different cultures 02 Investigate a range of composers 03 Recognise and define contrasts in music, such as vocal/instrumental or solo/ensemble 04 Experience, appreciate and respond to a variety of music 05 Express musical likes and dislikes and the reasons for a choice 06 Compare traditional European classical music to musical styles from other times and cultures	Activities include: - guided listening activities - group discussion - visiting musicians - visits to musical performances - stories about the lives of composers. Resources include: - music history timeline - recordings - card materials - research materials.
2.MU.090 Instruments of the Orchestra	01 Undertake a scientific exploration of sound 02 Experience and discuss sounds made by a variety of instruments (e.g., violin, flute, clarinet, trumpet, electronic keyboard) 03 Investigate instruments of the Western classical tradition as well as instruments of different cultures 04 Understand the history, construction and use of various instruments 05 Become aware of families of instruments (e.g., woodwind, brass, strings, percussion)	Activities include: - science experiments with sound - presentation of each instrument, including experience playing the instrument if possible - visiting musicians and instrument makers - visits to musical performances. Resources include: - card material - reference books and other research materials.

Music Curriculum for Children Aged Nine to Twelve

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.MU.010 Singing	01 Sing to an increased range of music including folk, historical, classical, pop and world music 02 Experience a variety of songs and appreciate the role of song in history and culture 03 Express oneself in song, including creating lyrics to a familiar piece of music 04 Build a repertoire of songs	Activities include: - guided group singing activities - group discussion - classroom and school productions - independent song writing projects - visiting performers - visits to singing performances. Resources include: - repertoire of songs - music history timeline.
3.MU.020 Movement	01 Experience and participate in combining music with drama 02 Recognise and use movement as an integral part of musical expression in free movement, drama and formal dance	Activities include: - guided group activities - classroom and school productions - visits to performances.
3.MU.030 Music theory with Montessori tone bars	01 Understand care and use of the tone bars 02 Experience, name and use symbols to represent sounds 03 Explore, recognise and name the degrees of the scale 04 Explore, recognise and name intervals 05 Explore, recognise and name the sequence of major scales, including sharps and flats 06 Explore, recognise and name key signatures 07 Explore the transposition of songs from one key to another	Activities include: - series of exercises with the tone bars - independent notation and composition projects. Resources include: - Montessori tone bars - card materials - notation sheets.
3.MU.040 Composition: percussion	01 Improvise, explore, select, combine and order sound 02 Add voice to percussion sound 03 Compose simple songs	Resources include: - rhythm cards - research materials - percussion instruments.
Music appreciation		
3.MU.050 Music history and literature	01 Recognise and appreciate music, its history, eras, and traditions (e. g. in the Western classical tradition) and traditions of different cultures) 02 Recognise and define contrasts in music, such as vocal/instrumental or solo/ensemble	Activities include: - guided listening activities - group discussion - visiting musicians - visits to musical performances - stories about the lives of composers - preparing responses, reviews and interpretations (spoken and written) of musical performances.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	03 Appreciate music from a range of cultures and gain an understanding of the influence of culture on music 04 Research composers and eras from a range of musical traditions	Resources include: - music history timeline - recordings - card materials - research materials.
3.MU.060 Understanding the orchestra	01 Identify the use of musical concepts and symbols in a range of repertoires 02 Identify the use of musical concepts and symbols in a range of musical styles 03 Become aware of different types of orchestra (e.g., symphony, chamber) 04 Become aware of the arrangement of an orchestra on stage 05 Collaborate to produce a musical piece	Activities include: - listening to recordings - research projects - visits to concerts - class, school and community performances.

Drama

Alongside the other areas of the creative arts, drama is integrated into the Montessori curriculum for children aged from six to twelve years. Here are some examples of ways drama is used across the Montessori curriculum.

The Montessori *grace and courtesy* lessons are presented and practised in the form of role-play. Children 'act out' effective, and less effective, ways of managing social situations. Through role-play children learn, for example, how to communicate in the classroom without disturbing others, how to ask for help, how to invite someone to join a group and how to answer the telephone.

Drama plays a key role in several areas of the language curriculum. For example, reading commands are games in which children act out what they have read. In other words, drama is used in the service of enhancing reading comprehension. In the Montessori grammar games children act out the meaning of variations in grammatical structures, in this way, learning the effect on meaning of even the slightest variation in grammatical structure. Through work with reading commands and grammar games children connect language and intentional movement.

The Montessori language curriculum also includes *interpretive reading* cards. Activities with these cards contribute to the drama curriculum for several reasons.

- They involve movement and require cooperation among the members of the group.
- They can be interpreted in a number of different ways, depending on answers to questions such as the following:
- What happened before the small scene on the card?
- What are the relationships between the characters in the scene?
- What might happen next?
- They can be used for dramatic reading as well, helping the children discover the importance of articulation of meaning, character, emotional content, mood and intent through variation in the use of the voice and various speaking techniques, including:
- loudness/softness
- tempo

- intonation
- rhythm
- emphasis
- character: accent, dialect, style of speaking
- articulation and enunciation

Children's independent work in subjects such as history, science and music, often lead them into preparing and performing their own simple dramatic productions. For example, in Science, groups of children act out the movement of particles in solids, liquids and gases to build greater understanding of the three states of matter, or they might prepare a dramatisation of the water cycle. Other excellent sources of material for plays include:

- fairytales and folktales from different cultures
- legends and myths
- timelines of human beings, fundamental needs of different cultures, including the children's own culture
- adaptations of professionally written plays, musicals, operas and operettas
- scenes performed in a language other than English
- dramatisations of biology, history and geography charts, for example the leaf as a food factory

Children learn specific interpretive or performance skills during drama 'games' introduced as part of a particular area of study, not as isolated instruction in drama. They put together small skits, scenes or dramatisations as their interest dictates. The children may also be involved in a play for the whole class, reflecting the work of the class. The children are involved in the writing and staging of scenes, music production, scenery, props and costumes. During projects of this kind the whole group collaborates to achieve a single goal, building community, self-discipline and a realisation of how important every detail is in a group venture on this scale. Individual children may participate at different levels, depending on age, level and interest. Through involvement in the staging of dramatic performances children experience of all the aspects of a complex creative process and come to understand the time and effort required. They also come to appreciate the work involved in theatre productions they attend during excursions and *going out* activities. Ideally, children of this age, who are interested in what happens behind the scenes, should have opportunities to visit back stage and to talk to actors, directors and those involved in staging the production.

Many drama activities can be incorporated into the physical education programme. These include theatre games, role plays and exercises that involve movement, cooperative effort, spatial orientation, coordination, body awareness, breathing techniques, improvisation and mime. An example of this is 'mirroring', where two children stand face to face. One child initiates the movements and one follows, mirroring the movements of the leader. Interpretations of music may also be done in this same context or during music lessons in the classroom.

Whole class and school dramatic and/or musical productions are also often developed and performed to celebrate special events (e.g., Children's Day, graduation). Children play key roles in all aspects of these productions, from inception to performance.

Drama Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.DR.010 Role Play	01 Enact with guidance the appropriate and inappropriate behaviour for everyday social situations	Activities are *grace and courtesy lessons* i.e. role-plays illustrating correct/incorrect behaviours
2.DR.020	01 Gain experience of the following:	Activities include drama and theatre games that:

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Drama games	– body awareness and control – spatial awareness and intentional movement – cooperation – coordination of movement – improvisation – mime	- isolate and build individual skills - combine skills in increasingly complex ways.
2.DR.030 Interpreting Text	01 Read and dramatise the text of a specific 'command'	Resources include: - interpretive reading cards - grammar commands - grammar boxes and command cards.
2.DR.040 Musical interpretation	01 Move to music to interpret and illustrate musical concepts (e.g., the life cycle of a seed to dramatise the musical scale) 02 Move to music to express feelings and emotions conveyed by the music	Activities include: - dramatic music games - free movement to a variety of music.
2.DR.050 Dramatic Productions	01 Convey story, depict events and express feelings by using the elements of drama and the expressive skills of movement and voice 02 Build dramatic action by using the elements of drama, movement and voice 03 Collaborate to communicate dramatic action 04 Sequence the action of the drama to create meaning for an audience 05 Adapt small stories from a text form to a dramatic form through the use of dramatisation and dialogue 06 Participate in performances of plays/dramatic productions	Activities include: - reading and study of plays and dramas - excursions to dramatic performances - presentations on specific structural elements of drama and dramatic skills - group work - adapting fairy tales, narratives and story material from across the curriculum - staging plays written by or for the children in the group.
2.DR.060 Related activities	01 Experience the knowledge and skills needed to stage a dramatic production	Activities include: - costume making and prop making - scenography - creating soundtracks and sound effects - staging and direction.

Drama Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.DR.010 Role Play	01 Enact with guidance the appropriate and inappropriate behaviour for everyday social situations	Activities are grace and courtesy lessons (i. e. role-plays illustrating correct/incorrect behaviours)

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.DR.020 Drama Games	01 Gain experience of the following: – body awareness and control – spatial awareness and intentional movement – cooperation – coordination of movement – improvisation – mime	Activities include drama and theatre games that: - isolate and build individual skills - combine skills in increasingly complex ways.
3.DR.030 History of Drama	01 Develop an understanding of the role of drama in human life and culture through the ages	Activities include: - research - dramatic story telling.
3.DR.040 Musical Drama	01 Use aspects of music to express and convey drama	Activities include: - musical dramas with percussion instruments - musical dramas with a wider range of instruments music - musical drama with songs, including songs composed by the children - excursions to opera and ballet.
3.DR.050 Dramatic Performance	01 Interpret and convey dramatic meaning by using the elements of drama and a range of movement and voice skills in a variety of drama forms. 02 Understand there are different types of drama (e.g., plays, pantomimes, movies, puppetry, musicals, opera, ballet, film) 03 Understand there are different dramatic genres (e.g., tragedy, comedy, historical)	Activities include: - discuss, read, study and perform dramas in class - experiment with playwriting - excursions to dramatic performances including musical and dance performances (e.g., opera, ballet, pantomimes, puppet shows, poetry readings and dance) - preparing responses, reviews and interpretations (spoken and written) of drama performances.
3.DR.060 Concert Production	01 Devise, act and rehearse drama for performance to an audience	Activities include: - key lessons on aspects of dramatic production - rehearsals to prepare for school concert - engaging in all aspects of a dramatic performance (e.g., acting, directing, costume and sets, lighting, front of house).
3.DR.070 Related activities	01 Experience the knowledge and skills needed to stage a dramatic production	Activities include: - costume making and prop making - scenography - creating sound tracks and sound effects - staging and direction.

Dance

Learning to dance and learning to appreciate dance are both included in the Montessori creative arts curriculum, and also play a significant role in physical education. Dance is an extension of the many

opportunities children in Montessori classrooms have to refine their movement and whole body coordination. Dance is often taught using specialist teachers. In this way children can be introduced to different styles of dance (e.g., folk dance, modern creative movement, jazz dance, bush dance). Children use the knowledge and skill they gain through learning dance in other areas of the curriculum. Dance is also often combined with music and drama performance. For example, the music and dance of different cultures and times may be studied in other areas of the curriculum.

Like other forms of physical activity, dance promotes awareness of the body and its potential. Dance exercises bring the children's awareness to their body alignment and their breathing, as well as the range of movement of each body part in isolation and together. Expressing oneself through dance requires exploration and the learning of techniques designed to extend range of motion, coordinate movements of different body parts, strengthen muscles and improve self-control in order to move with intent. Activities such as yoga and stretching exercises can be incorporated to draw attention to flexibility, concentration and breathing.

As well as learning about the body and its potential for movement, dance teaches the relationship of movement and space and of movement and time. The elements of dance (e.g., tempo, rhythm, dynamics, level, direction, focus and shape) bring the children into direct contact with their environment in a new and exciting way. The intimate relationship between dance and music makes dance a natural part of both the music and physical education curriculum.

Children of this age should be encouraged to practice what they have learned by creating their own dance compositions, individual, interactive and collaborative. Dance is an area of the curriculum where cooperation is encouraged. Many folk dances are excellent ways to promote social cooperation. Movement games often call for children to maintain their personal space, while respecting other's personal space (i.e. moving in different ways without bumping into each other). Other movement games require the children to coordinate different movements into a whole (e.g., creating a 'machine' with many moveable parts).

Dance Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.DA.010 History of Dance	01 Appreciate the role dancing has played in the human life throughout history	Activities include: - presentations, stories and research relating to the origins of dance as a fundamental human need - using dance to communicate and express meanings and feelings of peoples in different times and places.
2.DA.020 Principles of Movement and Choreography	01 Demonstrate awareness of the range of movement of the human body and its parts 02 Demonstrate kinesthetic awareness and concentration in movement, i.e. ability to mirror another's movements 03 Demonstrate non-locomotor (standing) movements (e.g., bend, twist, stretch, swing, sway) 04 Demonstrate 8 basic locomotor movements (e.g., walk, run, hop, jump, leap, gallop, slide, turn)	Activities include: - movement games and exercises - stretching exercises - dancing to various types of music.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	05 Demonstrate understanding of spatial concepts and locomotor movements (e. g. moving in different pathways without bumping into each other, making various shapes and defining and maintaining personal space 06 Demonstrate different types of changes in locomotor movement (e.g., tempo, level, dynamic, direction, energy) 07 Identify and demonstrate basic dynamic contrasts (e.g., fast-slow, gentle-strong), 08 Demonstrate accuracy in memorising and reproducing simple movement phrases	
2.DA.030 Dancing to Music	01 Demonstrate accuracy in moving to a musical beat and respond to changes in tempo and rhythm 02 Explore and select movement, using the elements of dance to express ideas, feelings or moods 03 Perform dances demonstrating expressive qualities and control over a range of locomotor (travelling) and non-locomotor movement.	Activities include: - movement games with rhythm and tempo - experimental/free dancing to a variety of musical styles - collaboration on projects involving dance - performance.
2.DA.040 Composing	01 Explore aspects of space (e.g., relationships with others, group tableaux, changing levels and directions of actions) 02 Create shapes in response to a stimulus (e.g., curved, square, tall, tired, animal) 03 Link shapes by moving from one shape to another in a specific order 04 Use elements of dance to vary movements (e.g., pathway, level, direction, tempo, duration) 05 Create symmetrical and asymmetrical shapes 06 Combine movement ideas in simple sequences 07 Demonstrate the ability to use dramatic imagery or themes to improvise simple movement sequences	Activities include: - creating tableaux and dances in response to cues and imagery - composing dances to support work in other disciplines - composing dances to various types of music - composing dances in the context of drama.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.DA.050 Dance Styles	01 Perform dances from a range of contexts (e.g., bush and folk dancing, multicultural dances, modern, jazz and pop, Aboriginal and Torres Strait Islander groups) 02 Demonstrate movement skills, expressive qualities and an understanding of the elements of dance 03 Explore, select and combine movement, using the elements of dance to communicate ideas, feelings or moods 04 Express personal opinions about a variety of dances and their purpose	Activities include: - learning a variety of dances - visiting dancers - excursions to dance performances - dance composition.
2.DA.060 Appreciation	01 Look for and identify elements of dance in their own performing and composing experiences 02 Look for and identify dance movement in relation to themes (i.e. interpret meaning) 03 Look for and identify the use of dance elements in dance pieces they watch 04 Gain experience with the vocabulary of dance elements and principles	Activities include: - viewing and discussing performances, live or on video - performing and discussing own performances.

Dance Curriculum for children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.DA.010 History of Dance	01 Perform dances from a range of contexts 02 Demonstrate movement skills, expressive qualities and an understanding of the elements of dance	Activities include: - learning a variety of dances from different times and places - research the origin of a dance style - visiting dancers - excursions to dance performances.
3.DA.020 Principles of Movement and Choreography	01 Using accurate vocabulary to describe the parts of the body and types of movement 02 Demonstrate the ability to emphasise and isolate specific body parts. Show awareness of weight, balance, posture, space 03 Perform locomotor and non-locomotor sequences that include more complex coordination of body parts (e.g., arms and legs moving at different tempi and through different planes) 04 Demonstrate a wide range of movement quality (e.g., abstract qualities such as sustained/ percussive, vibratory, forceful, suspended)	Activities include: - movement games and exercises - stretching exercises, breathing exercises - dancing to various forms of music.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
	05 Demonstrate movement qualities that represent mood, emotion or character in a stylised way. 06 Show an ability to vary elements of dance. 07 Demonstrate safe dance practices by performing technical exercises correctly and maintaining alignment while standing and travelling. 08 Demonstrate accuracy in memorising and reproducing more complex movement phrases	
3.DA.030 Dancing to Music	01 Explore, select and combine movement, using the elements of dance to communicate ideas, feelings or moods 02 Perform dance sequences to different time signatures	Activities include: - experimental/free dancing to a variety of musical styles - dance appreciation - collaboration on projects involving dance - creating and performing dances - independent work according to interest.
3.DA.040 Composing	01 Explore more complex aspects of the elements of dance to vary movements in composition (e.g., level, direction, size, pathway, tempo, duration, floor patterns, formations, contrast) 02 Combine movement ideas to create phrases of movement, developing simple transitions to move from one shape or movement to another 03 Create original shapes and movement qualities that can communicate intent (e.g., pushing/pulling, accelerating/decelerating, aggressive/gentle) 04 Demonstrate an ability to compose individually, in pairs and in larger groups 05 Explore ways to structure movement (e.g., repetition, contrast, floor patterns) 06 Reflect upon the dance compositions they make	Activities include: - composition exercises - improvisation - composing dance pieces as part of dramatising particular themes or researching other areas of the curriculum - composing dances in relation to larger performance pieces - independent work according to interest.
3.DA.050 Dance Styles	01 Perform dances from a range of styles, eras and cultures (e.g., bush and folk dancing, multicultural dances, modern, jazz and pop, Aboriginal and Torres Strait Islander groups) 02 Demonstrate movement skills, expressive qualities and an understanding of the elements of dance 03 Explore, select and combine movement, using the elements of dance to communicate ideas, feelings or moods 04 Express personal opinions about a variety of dances and their purpose	Activities include: - learning a variety of dances - visiting dancers - excursions to dance performances - preparing reviews and interpretations (spoken and written) of dance performances - integrate dances of different styles, eras and cultures into larger performances.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.DA.060 Appreciation	01 Discuss and interpret the relationship between content, meaning and context of their own and others' dances 02 Formulate questions about dance 03 Express opinions about dance based on knowledge of dance elements, the cultural background of the dance and music, using dance specific vocabulary 04 Gain experience with the vocabulary of dance elements and principles through exercises and composition	Activities include: - watching performances and discussions - discussing own compositions.
3.DA.070 School Concert	01 Work collaboratively to create dances which reflect particular themes and musical styles	Students choreograph, produce and perform dance routines as part of the annual school concert.

Media Arts for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.ME.010 History of Media Arts	01 Appreciate the role media arts has played in human life throughout history. (ACAMAR057)	Activities include: - Presentations, stories and research relating to the ways that media arts have been used to enhance fundamental human needs, especially in the development of story telling - Viewing media arts that communicate and express the meanings and feelings of peoples in different times and places - Studying media technology development throughout history

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.ME.020 Principles of Media Arts	01 Demonstrate an awareness of using sound, images and text to communicate ideas. (ACAMAM054) 02 Investigate and demonstrate how story structure can be represented through images, sounds and text: – Ideas – Settings – Tension – Viewpoints (ACAMAM058) 03 Investigate and demonstrate formats of images, sounds and texts appropriate to various text conventions. (ACAMAM059)	Activities include: - Exploring use of media arts in cultural stories - Creating sound effects to enhance the mood of a story - Creating storyboards to sequence images - Using a series of captured images to retell a story from history, from a personal experience, or from the local community - Creating cultural and community stories through technologies to capture image, sound and text - Creating stories of people and characters through technology to capture image, sound and text. - Examining various types of texts to determine their use of image, sound and text, e.g., magazine and newspaper covers
2.ME.030 Using Media Technologies	01 Experimenting with digital cameras to capture still or moving images, including: – Zooming in and out – Shot types – long, mid and close ups – Deleting unwanted images – Reviewing captured images – Framing of the subject (ACAMAM059) – Camera angles and lighting to create space 02 Experimenting with sound recording technology, including: – Volume, – Layering – Use of voice 03 Experimenting with text to accompany still or moving images, including: (ACAMAM059) – Fonts – Colour – Time of display – redits in a title sequence 04 Experimenting with using a range of software to add and edit images, sounds and text. (ACAMAM055)	Activities include: - Capturing digital images of the environment, to create cultural stories, or to record work - Creating sound effects with found objects to support a story - Creating cultural and personal stories using a range of software that include images, sound and text

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.ME.040 Creating and Presenting Media Arts	01 Planning and creating media artworks that communicate ideas and stories to an audience. (ACAMAM056/60) 02 Exploring the rules around permissions for using and creating images, sound and text in media artworks. (ACAMAR057) 03 Understanding the protocols of responsible media practice, including: — Asking for permission to use images and sounds of people (ACAMAM056) — Publication permissions and guidelines — Considering cultural and societal viewpoints (ACAMAM060)	Activities include: - Collecting and sharing images and from various classroom and school experiences for a class newsletter, bulletin, or blog - Creating picture collages, slideshows, advertisements, comics, radio plays, short animations to retell presentations, cultural stories or Great Stories - Storyboarding and filming short stories, advertisements and school related documentaries - Investigating school guidelines and creating class guidelines to support the creation and publication of media art presentations
2.ME.050 Appreciating Media Arts	01 Look for and identify where media arts have been experienced in everyday life and communities. 02 Identifying and compare purposes, viewpoints, intended audiences and meanings presented in media artworks from a variety of societies and cultures. 03 Look for, identify and compare the principles of media arts in their own, their peers and other viewed media artworks. 04 Gain experience with the vocabulary of the principles of media art. (ACAMAR057/61)	Activities include: - Viewing and discussing media artworks: why they are made, their viewpoints and meanings - Going Out to view media artworks in the community, including those of Australia's Aboriginal and Torres Strait Islander groups. - iewing and discussing social, cultural, and historical meanings of media arts, e.g., retelling of traditional stories

Media Arts for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.ME.010 History of Media Arts	01 Expand on the appreciation the role Media Arts has played in human life throughout history. (ACAMAR065)	Activities include: - Viewing and analysing historical and contemporary media representations and how they have influenced the characters, stories and values portrayed; for example, comparing television families over time

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.ME.020 Principles of Media Arts	01 Investigate and demonstrate how story structure can be represented through images, sounds and text: - Ideas - Settings - Tension - Viewpoints. (ACAMAM058) 02 Investigate and demonstrate formats of images, sounds and texts appropriate to various text conventions. (ACAMAM059) 03 Explore the use of story principles in media arts in images, sounds and text through: - structure - intent - representation of characters - settings - points of view - genre conventions (ACAMAM062)	Activities include: - Creating cultural and community stories through technologies to capture image, sound and text - Creating stories of people and characters through technology to capture image, sound and text. - Examining various types of texts to determine their use of image, sound and text, e.g., magazine and newspaper covers - Creating retells of everyday events using a variety of genre to create humour; for example, a sports commentary of a library visit - Discussing the ways that different relationships between characters are displayed by framing images - Designing characters for particular genres, including costume, dialogue and mannerisms - Using combinations of media art principles to represent the same person, location or ideas in different ways, for example, using different music or sound effects to change the meaning.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.ME.030 Using Media Technologies	01 Continue experimenting with capturing still or moving images through: – Framing the subject (ACAMAM059) – Close-ups and mediums close-ups to focus on character relationships, power or mood – Camera angles and lighting to create space 02 Continue experimenting with sound recording technology, through: – Volume and tempo – Layering - Use of voice 03 Continue experimenting with text to accompany still or moving images, Including: (ACAMAM059) – Fonts – Colour – Time of display – Credits in a title sequence 04 Extend on previous concepts through experimenting with media technologies that use images, sounds and text to shape: – Space (the distance and relationship between objects, sounds or text, or the depiction of place) – Time (order, duration, or depiction of events and ideas) – Movement (the way the eye discovers images or text; or the suggestion of movement through sound) – Lighting (light, shade and colour for effect) (ACAMAM063) 05 Experimenting with using a range of software to add and edit images, sounds and text.	Activities include: - Creating cultural and personal stories using a range of software that include images, sound and text - Creating short digital sequences that focus on character development through camera angles - Designing and creating animated sequences, for example, to personify inanimate objects - Using elements of web page design to address a particular audience - Adding music to film to heighten tension or mood; for example, quick tempo music to a police chase

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.ME.040 Creating and Presenting Media Arts	01 Planning, producing and presenting media artworks that communicate ideas and stories to a specific audience. (ACAMAM060/64) 02 Understanding the protocols of responsible media practice, including: – Permissions for music and voice talents – Acceptable and unacceptable use of borrowed materials – Publication permissions and guidelines – Considering cultural and societal viewpoints – Acceptable and unacceptable use of cultural and personal images, sounds and texts (ACAMAM060/64)	Activities include: - Creating picture collages, slideshows, advertisements, comics, radio plays, short animations to retell presentations, cultural stories or Great Stories - Storyboarding and filming short stories, advertisements, news reports, documentaries, green screen footage, websites, blogs - Designing navigational plans for a game, using multiple levels and obstacles - Creating radio and documentary scripts and adding music and/or voices - Publishing media arts using internet-based technologies - Investigating school and legal guidelines, and creating class guidelines to support the creation and publication of media art presentations - Researching how societal and cultural perspectives and values have been portrayed through media arts, and determining if judgements can be made by this
3.ME.050 Appreciating Media Arts	01 Compare media artworks from different social, cultural and historical contexts, including original artworks of Aboriginal and Torres Strait Islander people, using the elements of media arts: – Composition – Time – Space – Movement – Lighting 02 Compare media artworks from different social, cultural and historical contexts, including original artworks of Aboriginal and Torres Strait Islander people, using story principles, within the context of genre: – Structure – Intent / purpose – Characters – Settings – Points of view (ACAMAR064) – Intended Audience (ACAMAR061/65)	Activities include: - Identifying and comparing story principals or elements of media arts within and across genres - Research and compare historical and contemporary media representations, for example, how the portrayal of families has been influenced over time - Going Out to view media artworks in the community, including those of of Aboriginal and Torres Strait Islander people. - Viewing and discussing social, cultural, and historical meanings of media arts, e.g., retelling of traditional stories

Languages Other Than English (LOTE)

Overview

The rich linguistic and cultural diversity of the Australia community is echoed in the role languages other than English, and the culture they represent, play in the Montessori curriculum. Montessori educators recognise that engaging with a language other than English contributes to:

- a sense of personal achievement
- intellectual enrichment
- a better understanding of the world and Australia's place in it
- a better understanding of and enhanced respect for the many communities in Australia (ALLC 1996: 3)

The study of other languages will enable children to respond positively to future opportunities in a world increasingly shaped by globalisation and linked by information and communication technologies. Through experience with other languages children become increasingly aware of themselves as members of an international community.

Unlike the learning of their first language, to learn another language at school, children must focus consciously on language patterns and how they are used to make meaning. The intellectual challenge of learning another language, and the knowledge and skills gained, enhance all areas of children's intellectual development, including the development of literacy in their first language.

The aims for including the learning of another language in the Montessori curriculum include:

- developing an understanding of the culture and fundamental needs of another human group
- building enhanced communication skills
- focusing on the patterns of languages
- building understanding of the relationship between language and culture
- laying a foundation for a lifelong interest in learning other languages

When another language is introduced into a Montessori learning environment, it is integrated into all areas of the curriculum. Children are offered materials in the other language that mirror the materials they have been working with in their first language. All curriculum areas provide opportunities for the study of another language. Here are two examples:

- Montessori card material, comprising pictures, labels and definitions, in subject areas such as biology, zoology, geography and history can be adapted by adding labels and definitions in the other language to the reverse side of the cards.
- Procedures in the classroom, including classroom rules, experiments and recipes, can also be written in both languages.

As in all areas of the Montessori curriculum, materials and activities designed for learning a language other than English are prepared to enable self-directed, independent work for individuals and groups. These materials are placed on the shelves as another choice available to the children at any time of the day, rather that at one set time in the week only. Children are also involved in research-based projects relating to this language, its history and culture.

The language chosen as the other language to be learned in a Montessori school is determined by the location of the school and the population and culture of the school community. For young children Montessori educators believe that it is essential that they hear the new language spoken by native speakers, so the language will only be included in the school curriculum if there is a teacher available for whom this language is a first language. Children are offered as many opportunities as possible to hear the language spoken in everyday life, and in the context of different areas of the curriculum. When they are ready, they are also offered opportunities to use

the language in meaningful ways. Once a language has been chosen, this language and its culture is incorporated into many areas of school life, including celebrations, performances, and excursions (e.g., art exhibitions, shopping trips, markets, restaurants, festivals).

When children are introduced to work with other languages it is important to use familiar material. Vocabulary enriched picture material and labels in classified sets, similar to that used in the *Children's House*, can be used as a model for bilingual vocabulary building material. Each label can have an English word on one side and the corresponding word in the language being learned on one side of the card. The children then have a control of error in their own language. This material can be made for both words and sentences, classified by category or activity (e.g., *Fruits, Playing in the park*).

The Montessori *function of words* grammar games and reading command cards can be duplicated in the language being learned and used for reading exercises, building vocabulary, practising basic grammar and as models for writing exercises. Environment cards, puzzle words and phonogram books and cards can also be developed to help expand vocabulary and give basic spelling rules. Sets of rhyming words can be developed to enhance pronunciation and spelling. *Word study* materials should focus on types of word study that might be peculiar to the language being learned.

As the children progress, the grammar boxes can be duplicated in the language being studied. The children will be challenged to read for understanding at the same time as they are introduced to the basic grammar of the language. *Interpretive reading cards* in the language being learned will also help children explore written expression in the new language.

Classified picture card material and labels in the sciences and history may also be bilingual, as children with particular interests may be more inclined to practise the language if they are working with subject matter they are interested in.

Skits or scenes from longer plays can be made in the language being learned. Songs in the language should be part of the music work and any performances presented by the children.

LOTE Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
2.AL.010 Language Use: listening and responding	01 Recognise and respond to spoken words, phrases and simple sentences in the language 02 Recognise and respond to spoken texts in familiar situations in the language	Activities include: - active listening for and responding to spoken words, phrases, statements, questions, exclamations, requests (e.g., songs, rhymes, dance, actions, games) - identifying the purpose of and responding to short spoken texts in familiar situations (e.g., greetings, requests, statements, questions, exclamations) - listening to spoken presentations in other curriculum areas (e.g., mathematics) - listening to short spoken texts while following the written form - using paralanguage to support communication in culturally meaningful and appropriate ways (e.g., tone, pitch, volume, gestures, facial expressions) - repeating sounds, words and phrases with attention to pronunciation and meaning

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- functions of words grammar games. Resources include: - native speaker/s in the community - CDs/tapes to enable independent student work - reference charts, dictionaries, word lists and glossaries - classified card sets of pictures and labels.
2.AL.020 Language Use: reading and responding	01 Understand the relationship between printed text and corresponding sound and meanings 02 Demonstrate comprehension of written text (e.g., by answering questions, matching written cards to pictures, and doing actions) 03 Identify and respond to written language (e.g., stories, cards and messages) 04 Identify and respond to written words, phrases and simple sentences in a variety of ways (e.g., matching words with pictures, reconstructing a text, sequencing words/sentences)	Activities include: - recognising symbols, words, phrases and conventions of the written language (e.g., labels, captions, menus, charts, stories, cards, messages) - demonstrating reading comprehension (e.g., acting out, answering questions, matching written language to pictures, reconstructing text, sequencing written words and sentences) - locating key words and phrases in written text - word reading (e.g., environment labels, *puzzle words*, *word study*, rhymes, phonograms - grammar games (e.g., verb commands, logical adjective/adverb, *functions words*, grammar boxes). Resources include: - Montessori card material, definitions and booklets - easy to read books on topics of interest, stories and poems.
2.AL.030 Language Use: speaking	01 Use known words in the language studied to interact in everyday activities 02 Use familiar language to share information	Activities include: - singing, reciting and repeating phrases - participating in social interchanges e.g., greetings, introductions - using the language in classroom activities e. g. *grace and courtesy* - imitating/reproducing accurately pronunciation, intonation and stress - participating in short conversations to ask and respond to questions, make and respond to requests, give and respond to instructions - presentations in other areas of the curriculum. Resources include: - recordings on CDs - picture material to elicit conversation.
2.AL.040 Language Use: writing	01 Demonstrate developing writing skills by recognising and copying the language studied 02 Use models to write text to convey personal information and ideas	Activities include: - writing letters/characters, words and phrases - producing texts using a range of media e.g., greeting cards, posters - using reference materials e.g., charts, dictionaries, word lists, glossaries

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
		- using all of the Montessori material as a model for the children's own writing e.g., making own verb commands.
2.AL.050 Making Linguistic Connections	01 Recognise the diversity of language systems 02 Explore ways in which meaning is expressed in the language studied 03 Explore relationships between languages such as the influence of globalisation, different language rules, common features of social interaction across languages and similarities and differences in writing systems 04 Identify ways in which meaning is conveyed by the sounds, symbols and word order of the language studied	Activities include: - building awareness of the sounds and written forms of languages in the community and the different ways familiar concepts are expressed e.g., greetings, politeness markers - identifying familiar words from other languages e.g., pizza, sushi, kindergarten, café - researching different writing systems - attending to sounds and conventions in other languages e.g., in French accents over letters, use of alors when starting a new task - attending to appropriate nonverbal communication e.g., gestures, facial expressions.
2.AL.060 Moving Between Cultures	01 Demonstrate awareness of cultural diversity 02 Recognise the link between culture and identity 03 Identify cultural practices of communities which speak the language studied	Activities include: - identifying local places of cultural significance e.g., shops, markets, restaurants, places of worship - recognising expressions of culture e.g., music, dance, food, games, celebrations, flags, traditional dress, landmarks - excursions to places where other languages are spoken every day e.g., celebrations, shopping areas, restaurants - observing customs and traditions in social interaction e.g., greetings involving as kissing on both cheeks, shaking hands - researching other cultures - comparing own lifestyle with those who speak the language studied e.g., food, family. Resources include: - books, maps, magazines, newspapers, video - community.

LOTE Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.AL.010	01 Recognise and respond to spoken words, phrases and simple sentences in the language studied	Activities include: - identifying the context (e.g., purpose, topic, audience) and key ideas of spoken texts - listening for key words

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
Language Use: listening and responding	02 Organise and respond to key ideas from spoken texts in familiar situations	- listening to spoken texts while following the written form - using paralanguage to support communication in culturally meaningful and appropriate ways e.g., tone, pitch, volume, gestures, facial expressions - repeating sounds, words and phrases with attention to pronunciation and meaning - organising information to plan a response to a spoken text - responding in familiar situations - spoken presentations in other areas of the curriculum. Resources include: - native speaker/s in the community - CDs/tapes to enable independent student work - reference charts, dictionaries, word lists and glossaries.
3.AL.020 Language Use: reading and responding	01 Organise and respond to key ideas from written texts in familiar situations	Activities include: - learning strategies for responding to written texts e.g., searching for and selecting relevant information, recognising the purpose and structure of a text, deducing meaning of unfamiliar words from context - using reference resources to assist with comprehension e.g., word lists, glossaries, dictionaries - presenting information in a range of formats e.g., charts, graphs, picture sequences - reading for information relevant to other areas of the curriculum. Resources include reference materials e.g., charts, dictionaries, word lists, glossaries.
3.AL.030 Language Use: speaking	01 Interact with others by sharing key points of information in spoken form in the language studied	Activities include: - planning, drafting and presenting ideas in spoken language - using appropriate ways to open, maintain and close a conversation - recognising the importance of stress patterns and rhythm in conveying meaning - spoken presentations in other areas of the curriculum.
3.AL.040 Language Use: writing	01 Write texts to present key points of information in the language studied	Activities include: - using knowledge of context (e.g., purpose, topic, audience) when constructing written texts - using models and applying principles of text organisation to writing texts - engaging the interest of the reader e.g., by using computer technology to create greeting cards, invitations, posters.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
3.AL.050 Making Linguistic Connections	01 Identify ways in which meaning is conveyed by the sounds, symbols and word order of the language studied 02 Recognises the importance of context in language use 03 Identify patterns and features of the language studied by making comparisons between languages	Activities include: - attending to the distinctive features of the spoken language e.g., pronunciation, word order, formulaic expressions - identifying features of everyday texts e.g., advertisements, posters, postcards - interpreting meanings using contextual knowledge - recognising how language use is shaped by context e.g., playground v classroom language - comparing word order and other language patterns with English and other languages - recognising distinctive features of the written language e.g., spelling patterns - researching distinctive features of the language e.g., Internet, pen pals, native speakers in the community.
3.AL.060 Moving Between Cultures	01 Identify connections between culture and language use in communities that speak the language studied 02 Demonstrate awareness of cross-cultural influences on language and culture	Activities include: - exploring language conventions in social interaction e.g., in French saying Bon Anniversaire!, using tu or vous - exploring the way foreign words are incorporated into English e.g., words relating to food, music, technology - exploring influences of the language and its culture on the local community e.g., restaurants, festivals, religion - exploring what influences the evolution of languages and culture e.g., trade, globalisation, technology, youth culture researching the significance of specific cultural values and practices - participating in activities associated with the customs and practices of communities speaking the language being studied - comparing traditional and contemporary lifestyles e.g., gender roles, family, food, clothing, religion - research projects and excursions.

Personal Development, Health and Physical Education (PDHPE)

Overview

Movement, fitness and health have been incorporated into the Montessori curriculum from the time of the first school established by Dr Montessori more than a hundred years ago. Drawing on her medical training, Dr Montessori was keenly interested in the health of the human body, and argued strongly that physical activity and good nutrition were essential to the well-being of children. A key component of the Montessori curriculum, from birth, is a focus on the development and refinement of coordinated movement. Dr Montessori also designed gymnastic equipment for the children in her schools, and encouraged games in the open air for younger children and outdoor adventure education for older children.

The Montessori curriculum provides a repertoire of activities to enable individual Montessori schools to develop customised programmes to meet their own requirements and those of local education authorities. For children from six to twelve years, the *Cosmic Education* curriculum provides many opportunities for considering ways of improving quality of life for themselves and others in the classroom and wider community in terms of health and lifestyle, personal relationships, values education, social responsibility and social justice. Here are some examples:

- Children move freely around the classroom during the day to complete their work and to care for their environment. They can vary their place of work depending on need e.g., to sit on a chair or on the floor, to stand or walk, to have more or less light, to talk with others or to work quietly.
- Many of the activities and exercises of the curriculum incorporate physical activity, including reading and grammar games.
- The study of biology includes the story of the great river, a story that initiates the study of human physiology and emphasises the interdependence of all the organs of the human body.
- The study of history is organised around an understanding of the fundamental needs of humans, including spiritual needs (personal and artistic expression and religion), as well as material needs (food, clothing, housing, transport and defence, including defence from disease).

As in all areas of the Montessori curriculum, materials and activities designed for PDHPE are prepared to enable self-directed, independent work for individuals and groups. These materials are placed on the shelves as another choice available to the children at any time of the day, rather that at set times only. Children are also involved in research-based projects relating to PDHPE.

The key components of the Montessori PDHPE programme are:

- personal development (incorporating lessons of grace and courtesy)
- health awareness
- physical education

Personal Development (Incorporating *Lessons in Grace and Courtesy*)

In the Montessori classroom social behaviour is learned through observation and imitation. The three-year age range includes children at varying stages of social and emotional maturity. Older children have the opportunity to become role models and to assist younger children with resolving issues and building their social skills.

Children are shown how to manage social interactions in effective ways during small group lessons known as the lessons in *grace and courtesy*. These lessons are given at point of need in order draw children's attention to ways of interacting with others that respect everyone in the class community and that promote harmony. These lessons can take several forms, including:

- short role-plays or mini-dramas, often highlighting inappropriate behaviour in humorous ways, then modelling more effective behaviour, or asking the children to act out more effective behaviour

- story-telling
- group discussions

Lessons in *grace and courtesy* (sometimes called *how to* lessons) include:
- how to put a chair under a table without disturbing others
- how to interrupt politely
- how to introduce one person to another
- how to express your feelings without hurting others.

As much as possible appropriate social behaviours are taught through modelling and *grace and courtesy lessons* rather than through correction. It takes time and much repetition of the *grace and courtesy lessons* before children understand and incorporate the appropriate behaviour into their own behaviour. The lessons are, therefore, repeated as necessary, but the teacher never draws attention to a particular child or group of children who 'need' the lesson. In the Montessori view, correction that embarrasses children, or makes them self-conscious, is damaging and usually counterproductive.

At all times respect of oneself and for others is emphasised. Friendships are also valued as these lay the foundation for future extended relationships. Everyday in Montessori classrooms children make their own decisions about their work and their interpersonal relationships. Children are encouraged to work together to create a miniature and harmonious society.

At the beginning of every school year each class meets to work out the rules the class needs to follow if they are to work harmoniously and productively together. The rules are reviewed from time to time and adjusted if needed. Because the children have discussed and voted on the rules themselves, they adhere to them and 'police' them far more rigorously than an adult would. Class meetings continue to be held weekly to discuss problems and issues that have arisen during the week and to work out solutions. In this way children experience the roles and responsibilities of community living.

Health Awareness

There are many features of the Montessori curriculum that show children the importance of a healthy lifestyle.

- Through exercises in practical life children learn to care for themselves and their environment, including routines for maintaining health, hygiene and cleanliness (e.g., washing hands, cleaning teeth, pouring water to drink, preparing fruit, dressing for the climate, cleaning surfaces, washing up, sweeping floors).
- During the study of history the fundamental needs of humans charts initiate discussions of those things humans need to live, including good food, safe and secure housing and defence against disease. Follow-up discussions and research projects extend children's exploration and knowledge to cover nutrition, personal safety and prevention of disease.
- During the study of biology, beginning with the story of the great river (a metaphor for the circulation system of the human body), children learn about the functions of the different organs of the body, and the way they work together. With this knowledge children are able to consider how best to keep each organ, and their whole body, healthy and functioning properly.
- During the study of botany, children grow plants. As part of this study, they are encouraged to grow plants for food. They can then harvest and prepare the food.
- As in all other areas of the curriculum children are encouraged to research PDHPE topics, matched to children's age and interest, and to present their research to the class. Topics might include, for example, nutrition, the effect of exercise on the body, sun and road safety, or the uses of medication and/or drugs.

Physical Education

In 1947, during a training course in India, Dr Montessori described the most effective school for children aged from six to twelve in the following way:

> *The school for this age must be full of activity, not only for knowledge, not only for the development of the mind, but also for the development of the body.*

Gymnastics was an activity Dr Montessori particular valued for the following reason:

> *Just as (with) movement, the gymnastics of children is necessary because, as is well known, muscles which are not exercised become incapable of performing the variety of movements of which the muscular system is capable.*

She was also an early advocate of teaching young children to swim from as early as the age of four. Regular physical activity is, therefore, an essential component of the Montessori curriculum.

Very young children, infants and toddlers, are very active. They are constantly moving, whether crawling, walking, running, climbing, jumping, swinging or balancing. It is important, as children grow older, to create an environment in which they can maintain this level of physical activity and extend their stamina and physical endurance. To achieve this, the school environment must be designed to promote regular physical activity and to extend children's physical skill and capacity. As well as opportunities for free movement in the classroom, children in Montessori schools participate in a range of games and exercises that enable them to build agility, strength and coordination progressively, from individual skills to combined, and increasingly more complex, skills. In addition, they participate in a range of fitness activities, including team sport, athletics, water safety/swimming/aquatics, tennis, yoga and dance.

In the Montessori curriculum physical education lessons, materials and activities are designed following the same principles as lessons in other curriculum areas.

- Materials and activities are prepared to enable self-directed, independent work for individuals and groups. The equipment is attractive, child-sized, stored in an orderly fashion and is easily accessible to students.
- Brief initial lessons, called key lessons, give children just enough information to enable independent exploration (e.g., to introduce a skill, the rules of a game or the safe use of equipment).
- Children are free to choose to work with the materials and exercises during the work period and for as long as they like.

The Montessori sports curriculum does not emphasise competitive games. Dr Montessori (1989/1930:17) argued that once children are concentrating on an activity, they are more interested in the activity than in competition. Games are played with an emphasis on:

- enjoyment
- the gaining of new skills
- team work and collaboration
- being a good sport
- safety

Wherever possible, new skills are introduced by skilled adults (e.g., certified swimming teacher).

PDHPE Curriculum for Children Aged Six to Nine Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
C2PE010 Personal development (incorporating lessons in grace and courtesy)	01 Acquire and use appropriate social customs and manners 02 Accept responsibility for actions and the consequences that follow 03 Identify ways to communicate, cooperate and care for others 04 Use communication and cooperation skills to share feelings and meet basic needs when interacting with others 05 Develop the ability to make decisions as an individual and as a group member 06 Develop respect for self and for others 07 Develop meaningful and lasting relationships and friendships	Activities include: - lessons in grace and courtesy - collaborating on learning and research - creating and reviewing class rules collectively - regular class meeting - discussing values e.g., respect, care, compassion, responsibility, tolerance, inclusion - discussing class rules that have been composed and agreed upon by the children - story-telling, role-play, drama. Resources include three-year age range of class community.
C2PE020 Health Awareness	01 Recognise that positive health choices can promote well-being 02 Recognise that safety depends on the environment and the behaviour of self and others 03 Learn safety measures in the home, at school, on the street 04 Discuss and understand factors influencing personal health choices 05 Develop an appreciation for a healthy lifestyle 06 Name and understand the basic internal/external parts and systems of the body and understand their functions	Activities include: - discussing and researching relevant topics e.g., nutrition/diet, grooming, hygiene including teeth, safety including road, sun, water, fire, home, school - growing fruit and vegetables to prepare and/or cook - studying internal/external parts and systems of the human body and their function. Resources include: - fundamental needs of humans chart - body function material - the great river story and chart.
C2PE030 Physical Education: basic physical fitness	01 Participate in physical activity, recognising that it can be both enjoyable and important for health 02 Understand the relationship between regular and varied physical activity and health 03 Improve physical fitness	Activities include: - free movement within the classroom - practising a variety of movements e.g., balancing, walking, running, galloping, hopping, skipping - participating in regular aerobic exercise (e.g., jogging, skipping, dance) in 10 minute sessions three to five times a week - exercises of practical life e.g., cleaning, tidying, gardening, cooking - active games across the curriculum e.g., interpretive reading, grammar games.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
C2PE040 Physical Education: sport – ball skills	01 Follow a simple sequence that links basic movement patterns 02 Develop eye/hand and eye/foot coordination and balance 03 Develop ball handling skills	Activities include practising ball handling skills e.g., catching, dribbling, striking, bouncing. Resources include a range of surfaces e.g., hard flat surface, vertical wall with hard surface;, large grassed area) and sports equipment (e.g., balls, bats, hoops, ropes.
C2PE050 Physical Education: sport – game skills	01 Perform fundamental movement skills with equipment in minor games 02 Develop the physical skills necessary for the enjoyment of and participation in a variety of sports 03 Develop social skills such as collaboration and a healthy approach to winning and losing 04 Develop a sense of fair play and sportsmanship	Activities include: - key lessons and practice e.g., two/three 30 minute sessions per week or a 1- 1½ hour sport session a week - forming and working in teams - discussions, activities and exercises on the meaning of fair play.
C2PE060 Physical education: staying safe	01 Develop an understanding of safety in the environment and the need for safe behaviours	Activities include discussions, role-plays and exercises around safety and the practice of safe behaviours.
C2PE070 Physical education: a selection of activities	01 Demonstrate control in performing sequences of introductory gymnastic movements (e.g., static balance; vertical jump; spatial awareness) 02 Participate in physical activity, recognising that it can be both enjoyable and important for health 03 Participate in physical activity, recognising that it can be both enjoyable and important for health 04 Perform simple dance sequences incorporating basic movement skills and patterns 05 Perform familiar movement patterns in a variety of dance situations 06 Develop strength, endurance and coordination 07 Experience individual accomplishment, teamwork and the value of sportsmanship 08 Build endurance and strength while participating in and enjoying the surrounding environment (particularly nature)	Activities include participating in a range of activities adapted to children's age and capacity and appropriately supervised e.g., gymnastics, yoga, swimming and water safety, dance, athletics, bushwalking. Resources include appropriately trained teachers and appropriate venues and facilities.

PDHPE Curriculum for Children Aged Nine to Twelve Years

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
C3PE010 Personal development (incorporating lessons in grace and courtesy)	01 Display appropriate verbal and physical behaviour in everyday situations 02 Use interpersonal processes and the related communication and cooperation skills to contribute to and enhance interpersonal and group interactions 03 Make decisions as an individual and as a group member 04 Use a range of problem-solving strategies in personal and social situations 05 Develop meaningful and lasting relationships and friendships 06 Communicate confidently in a variety of situations 07 Demonstrate tolerance for others as unique individuals and for their culture and customs 08 Come to an understanding of personal strengths and needs 09 Act in ways that enhance the contribution of self and others in a range of cooperative situations	Activities include: - lessons in grace and courtesy - collaborating on learning and research - creating and reviewing class rules collectively - regular class meetings - discussing values e.g., respect, care, compassion, responsibility, tolerance, inclusion - story-telling, role-play, drama - school camp - peer support and mentoring. Resources include three-year age range of the class community.
C3PE020 Health Awareness	01 Name and understand the internal and external parts and systems of the body and understand their functions 02 Explain the consequences of personal lifestyle choices 03 Describe safe practices appropriate to a range of situations 04 Study first aid	Activities include: - detailed study of the human body e.g., structure of cells, parts and functions of the brain, glands, genes. - Life Education lessons e.g., nutrition, drug education - guest speakers and visiting health professionals - first aid information and demonstration by qualified instructor.
C3PE030 Physical education: basic physical fitness	01 Enjoy physical activity 02 Improve physical fitness	Activities include: - participating in regular aerobic exercise (e.g., jogging, skipping, dance, circuits) in10 minute sessions three to five times a week - obstacle course - partner activities.
C3PE040 Physical education: sport – ball skills	01 Develop appropriate ball skills for particular ball games and sporting situations	Activities include practising ball games regularly (e.g., handball, softball, netball, badminton, table tennis, cricket, tennis, volleyball, squash) in two/three 30 minute sessions a week or once a week at a 1-1½ hour sport session.

Content Strand	Knowledge, Skills and Understanding *Typically, children will:*	Material/Activity
C3PE050 Physical education: sport – game skills	01 Participate in and use equipment in a variety of non-competitive games and modified sports 02 Apply movement skills in team games and sports that require communication, collaboration, decision-making and observation of rules	Activities include: - non-competitive games and modified sports - discussions, activities and exercises on the meaning of *fair play.*
C3PE060 Physical education: staying safe	01 Develop an understanding of safety in the environment and the need for safe behaviours	Activities include: - discussions, role-plays and exercises around safety and the practice of safe behaviours - peer support and mentoring.
C3PE070 Physical education: a selection of activities	01 Demonstrate coordinated actions of the body when performing gymnastic sequences 02 Refine and apply movement skills creatively to a variety of challenging situations 03 Show how to maintain and improve the quality of an active lifestyle 04 Perform a range of dance styles and sequences confidently 05 Develop strength, endurance and coordination 06 Experience individual accomplishment, teamwork and the value of sportsmanship 07 Build endurance and strength while participating in and enjoying the surrounding environment (particularly nature) 08 Build orienteering skills 09 Experience success in challenging activities in a collaborative atmosphere	Activities include: - participating in a range of activities adapted to children's age and capacity and appropriately supervised e.g., gymnastics, yoga, swimming and water safety, surfing, dance, athletics, bushwalking, camping, orienteering, cycling, riding - planning for activity e.g., preparing equipment including safety equipment such as first aid kit and mobile phone; organising appropriate venue and safe transport to venue; ensuring appropriate adult supervision is available; becoming familiar with safety procedures - initial training in sport-related skills e.g., coaching, referee, life-saving, first aid, bicycle repair, care of horses Resources include appropriately trained teachers and appropriate venues and facilities.

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