Primary Professional Development Service

SESE Science

Curriculum 'Glance Cards'

A fundamental principle of the curriculum is that children's current understanding and knowledge should form the basis for new learning. The curriculum is designed to follow an incremental approach to teaching and learning by increasing the complexity of concepts as the child progresses through the primary school. The content objectives outlined in each of the strand units observe a spiral progression as the curriculum advances from infants to sixth class.

These curriculum "glance cards" were designed to provide a one-page overview of the content objectives in each strand unit for all class levels. **It is not intended that these glance cards replace the curriculum documents** but that rather they will provide an immediate snapshot of how particular concepts are developed from infants to sixth class.

Teachers are advised to pay particular attention to this feature of the curriculum when planning their work. It is important that teachers are fully aware of the level of knowledge and understanding required of the child in previous class levels as it will inform current planning. It is also important that teachers are familiar with what the children will be learn after the present class level so that they can prepare the child adequately for further learning. Awareness of the curriculum content which precedes and follows the current class content ensures progression in teaching and learning, and minimises unnecessary duplication.

Teachers may find this useful when they are engaging in continuing professional development, or when they are planning for teaching and learning. However, **it is essential that teachers consult the curriculum documents when engaging in planning as the content objectives are expanded upon in the context of the various class levels.**

It is also assumed that every content objective in these cards is preceded by **"The child will be enabled to...."** as is stated in the curriculum. Where it appears that a content objective applies to junior classes and is discontinued in higher class levels, it is intended that teachers continue to explicitly teach these concepts if the required level of understanding has not been reached. If the learning objective has been realised, the teacher will endeavour to maintain and consolidate the learning.

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Strand: Living things

Strand unit: Myself /Human life (3rd – 6th)

Infants	First and second	Third and fourth	Fifth and sixth
Variety and characteristics of humans	*Variety and characteristics of humans*	*Variety and characteristics of humans*	*Variety and characteristics of humans*
Identify parts of the male and female body	Name and identify external parts of the male and female body and their associated functions or senses	Become aware of the names and structures of some of the body's major external and internal organs	Develop a simple understanding of the structure of some of the body's major internal and external organs
Recognise and measure physical similarities and differences between people	Recognise and/or measure physical similarities and differences between individuals		
	Become aware of the role of each sense in detecting information about the environment and in protecting the body		
Human life processes	*Human life processes*	*Human life processes*	*Human life processes*
Become aware of some changes that occur as children grow and mature	Recognise that all living things grow and change	Understand the physical changes taking place in both male and female during growth to adulthood	Develop an understanding of the reproductive systems of both male and female and of the physical changes taking place in both male and female during growth to adulthood
Become aware that people have a variety of needs for growth	Recognise that physical growth has taken place since birth		
	Identify some requirements for growth and development in the human		
Develop an awareness of human birth	Begin to identify the main phases of the human life cycle		
Use all the senses (touch, smell, sight, taste, hearing) to become aware of and explore environments	Use all the senses to become aware of and explore environments		
		Develop an awareness of the importance of food for energy and growth	
		Become aware of and investigate breathing	Become aware of and investigate breathing
		Explore and investigate how people move	
			Identify and understand ways in which the body protects itself against disease and infection
			Develop a simple understanding of food and nutrition

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Strand: Living things

Strand unit: Plants and animals/Plant and animal Life (5th & 6th)

Infants	First and second	Third and fourth	Fifth and sixth
Variety and characteristics of living things	*Variety and characteristics of living things*	*Variety and characteristics of living things*	*Variety and characteristics of living things*
Observe, discuss and identify a variety of plants and animals in different habitats in the immediate environment	Observe, identify and explore a variety of living things in local habitats and plants and animals in different environments	Observe, identify and examine the animals and plants that live in environments	Observe, identify and examine the animals and plants that live in local habitats and environments
Become aware of animals and plants of other environments	Develop some awareness of plants and animals from wider environments	Develop an increasing awareness of plants and animals from wider environments	Develop an increasing awareness of plants and animals from wider environments
			Recognise that there is a great diversity of plants and animals in different regions and environments
			Identify the interrelationships and interdependence between plants and animals in local and other habitats
Sort and group living things into sets	Group and sort living things into sets according to certain characteristics	Sort and group living things into sets according to observable features	Group and compare living things into sets according to their similarities and differences
		Use simple keys to identify common species of plants and animals	Become familiar with the characteristics of some major groups of living things
			Construct and use simple keys to identify locally occurring species of plants and animals
Recognise and identify the external parts of living things	Recognise and describe the parts of some living things		
		Observe and explore some ways in which plant and animal behaviour is influenced by, or adapted to, environmental conditions	Observe and explore some ways in which plant and animal behaviour is influenced by, or adapted to, environmental conditions
		Understand that plants use light energy from the sun	Become aware of the sun as a source of energy for plants through photosynthesis
		Come to appreciate that animals depend on plants and indirectly on the sun for food	
		Discuss simple food chains	
	Recognise that tree are plants		

	Processes of life	*Processes of life*	*Processes of life*
Observe growth and change in some living things	Appreciate that living things have essential needs for growth	Become aware of some of the basic life processes in animals	Become aware of some of the basic life processes in animals and plants
Explore conditions for growth of bulbs and seeds	Explore, through the growing of seeds, the need of plants for water and heat	Investigate the factors that affect plant growth	Investigate the factors that affect plant growth
Become aware that animals and plants undergo seasonal change in appearance or behaviour	Understand that seasonal changes occur in living things and examine the changes in plant and animal life during the different seasons		
	Investigate how plants respond to light		
			Understand some ways in which plants reproduce

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Strand: Materials

Strand unit: Properties and characteristics of materials

Infants	First and second	Third and fourth	Fifth and sixth
Observe a range of familiar materials in the immediate environment	Identify and investigate a range of common materials used in the immediate environment	Identify and investigate a range of common materials used in the immediate environment	Identify and investigate a widening range of common materials used in the immediate environment
Describe and compare materials, noting the differences in the colour, shape and texture	Describe and compare materials, noting the differences in colour, shape and texture	Describe and compare materials, noting the differences in colour, shape and texture	
Group materials according to certain criteria	Group materials according to their properties	Group materials according to their properties	Group materials according to their properties and/or composition
Investigate materials for different properties	Identify and investigate materials that absorb water and those that are waterproof		
Know about some everyday uses of common materials			Identify how materials are used
	Begin to distinguish between natural and manufactured materials	Distinguish between raw and manufactured materials	Explore the origins of these materials
	Begin to explore how different materials may be used in the construction of homes suited to their environments	Investigate how materials may be used in the construction	
		Recognise that materials can be solid, liquid or gaseous	Recognise that materials can be solid, liquid or gas form
			Recognise that gas, such as air, occupies space, has mass and exerts pressure
			Become aware that air is composed of different gasses
			Become aware of some of the practical applications of these gasses in everyday life
			Recognise that some materials decay naturally while others survive a long time in the environment

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Strand: Materials

Strand unit: Materials and change

Infants	First and second	Third and fourth	Fifth and sixth
	Heating and cooling	*Heating and cooling*	*Heating and cooling*
Explore the effects of water on a variety of materials			
Observe and describe materials when they are wet and when they are dry			
Identify some materials that are waterproof			
Explore the effect of heating and cooling on everyday objects, materials and substances	Explore the effects of heating and cooling on a range of liquids and solids	Explore the effects of heating and cooling on a range of liquids, solids and gasses	Explore the effects of heating and cooling on a range of liquids, solids and gasses
	Explore ways in which liquids and solids may be kept hot or cold		
	Become aware of and investigate the suitability of different kinds of clothes for variations in temperature	Investigate the suitability of different kinds of clothes for variation in temperature	
		Experiment to establish which materials are conductors of heat or insulators	Experiment to establish which materials are good conductors of heat or good insulators
			Identify ways in which homes and buildings are heated and insulated
			Recognise how heating and cooling can be used to preserve food
	Mixing and other changes	*Mixing and other changes*	*Mixing and other changes*
	Begin to investigate how materials may be changed by mixing	Investigate how materials may be changed by mixing	Investigate how a wide range of materials may be changed by mixing
	Investigate the characteristics of different materials when wet and dry	Investigate the characteristics of different materials when wet and dry	Investigate the effects of light air and water on materials
		Examine the changes that take place in materials when physical forces are applied	Examine the changes that take place in materials when physical forces are applied
		Explore some simple ways in which materials may be separated	Explore simple ways in which materials may be separated
			Recognise that oxygen is required for burning

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Strand: Energy and forces

Strand unit: Forces

Infants	First and second	Third and fourth	Fifth and sixth
Explore, through informal activities with toys, forces such as pushing and pulling	Explore how objects may be moved by pushing and pulling	Explore how objects may be moved	Identify and explore how objects and materials may be moved
Explore how the shape of objects may be changed by squashing, pulling and other forces			
Investigate how forces act on objects	Investigate how forces act on objects		
	Become aware of and explore how moving water and moving air can make things move	Investigate the pushing force of water	
	Observe and investigate the movement of objects such as toys on various materials and surfaces	Explore the effects of friction on movement through experimenting with toys and objects on various surfaces	Explore the effect of friction on movement and how it may be used to slow or stop moving objects
			Explore how friction can generate heat
		Explore how some moving objects may be slowed down	
		Investigate falling objects	
		Explore how levers may be used to help lift different objects	Explore how levers may be used to help lift different objects
			Come to appreciate that gravity is a force
			Become aware that objects have weight because of the pull of gravity

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Strand: Energy and forces

Strand unit: Light

Infants	First and second	Third and fourth	Fifth and sixth
Identify and name different colours		Investigate that light can be broken up into many different colours	Investigate the splitting and mixing of light
Sort objects into sets according to colour			
Observe colours in the local environment			
Explore dark and bright colours and become aware of different shades of colour			
Discuss the differences between day and night, light and shade			
Explore how shadows are formed			
	Recognise that light comes from different sources	Recognise that light comes from different natural and artificial sources	Know that light travels from a source
	Recognise that light is needed in order to see		Appreciate the importance of sight
	Investigate the relationship between light and materials	Investigate the relationship between light and materials	Investigate the refraction of light
	Recognise that the sun gives us heat and light, without which we could not survive	Recognise that the sun gives us heat and light, without which people and animals could not survive	Understand the role of sunlight in photosynthesis and appreciate that the sun gives us heat and light without which people could not survive
	Become aware of the dangers of looking directly at the sun	Be aware of the dangers of looking directly at the sun	Be aware of the dangers of excessive sunlight
		Learn that light is a form of energy	Learn that light is a form of energy
		Investigate how mirrors and other shiny surfaces are good reflectors of light	Investigate how mirrors and other shiny surfaces are good reflectors
			Explore how objects may be magnified using simple lens or magnifier

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Strand: Energy and forces

Strand unit: Sound

Infants	First and second	Third and fourth	Fifth and sixth
Recognise and identify a variety of sounds in the environment	Recognise and identify a variety of sounds in the environment	Recognise and identify a variety of sounds in the environment	Recognise and identify a variety of sounds in the environment and appreciate the importance of noise control
Identify and differentiate between high and low sounds, loud and soft sounds	Identify and differentiate between high and low sounds, loud and soft sounds		
Explore ways of making different sounds using a variety of materials	Explore ways of making different sounds using a variety of materials	Understand and explore how different sounds may be made by making a variety of materials vibrate	Understand and explore how different sounds may be made by making a variety of materials vibrate
	Design and make a range of simple percussion instruments	Design and make a range of simple string instruments using an increasing variety of tools and materials	Design and make simple woodwind instruments
		Explore the act that sound travels through materials	Explore how sound travels through materials
		Learn that sound is a form of energy	Learn that sound is a form of energy
			Appreciate the importance of hearing

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Strand: Energy and forces

Strand Unit: Magnetism

Infants	First and second	Third and fourth	Fifth and sixth
Use magnets of different shapes and sizes in purposeful play to explore their effects on different materials	Use magnets of different shapes and sizes in purposeful play to explore their effects on different materials	Learn that magnets can push or pull magnetic materials	Learn that magnets can push or pull magnetic materials
Investigate the fact that magnets attract certain materials	Investigate that magnets attract magnetic materials, such as iron and steel	Examine and classify objects and materials as magnetic and non-magnetic	
	Investigate that magnets attract certain materials through other materials	Investigate that magnets attract certain materials through other materials	
		Explore the relationship between magnets and compasses	
		Explore how magnets have poles and investigate how these poles attract and repel each other	
			Explore the use of magnets to lift and hold objects
			Investigate how magnets may be made

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Strand: Energy and forces

Strand Unit: Electricity

Infants	First and second	Third and fourth	Fifth and sixth
Become aware of the uses of electricity in school and at home	Become aware of the uses of electricity in school and at home		
Identify some household appliances that use electricity	Identify some household appliances that use electricity		Become aware of how some common electrical appliances work
Become aware of the dangers of electricity	Become aware of the dangers of electricity		
	Explore the effects of static electricity	Become aware of the dangers of electricity	Become aware of and understand the dangers of electricity
		Explore the effects of static electricity	
		Observe the effects of static electricity on everyday things in the environment	
		Learn about electrical energy	Learn about electrical energy
		Investigate current electricity by constructing simple circuits	Investigate current electricity by constructing simple circuits
		Examine and group materials as conductors (those that conduct electricity) and insulators (those that do not allow electricity to pass through)	

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Strand: Energy and Forces

Strand Unit: Heat

Infants	First and second	Third and fourth	Fifth and sixth
Recognise the difference between hot and cold in terms of weather, food, water and the body	Learn that temperature is a measurement of how hot something is	Recognise that temperature is a measurement of how hot something is	
Identify ways of keeping objects and substances warm and cold			
	Become aware of the different sources of heat energy	Understand that the sun is Earth's most important heat source	Recognise a variety of sources of heat
	Measure and compare temperature in different places in the classroom, school and environment	Measure and compare temperature in different places in the classroom, school and environment and explore the reasons for variations	
		Measure changes in temperature using a thermometer	Measure and record temperature using a thermometer
		Learn that heat can be transferred	Know that heat energy can be transferred
			Experiment with a range of materials to establish that heat may be transferred in different ways
		Identify ways in which homes, buildings and materials are heated	

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Strand: Environmental awareness and care

Strand Unit: Environmental awareness

Infants	First and second	Third and fourth	Fifth and sixth
		Identify positive aspects of natural and built environments through observation, discussion and recording	Identify positive aspects of natural and built environments through observation, discussion and recording
		Identify the interrelationship of the living and non-living elements of local and other environments	Explore some examples of the interrelationship of the living and non-living aspects of local and other environments
		Become aware of the importance of the Earth's renewable and non-renewable resources	Become aware of the importance of the Earth's renewable and non-renewable resources
			Foster an appreciation of the ways in which people use the Earth's resources
		Come to appreciate the need to conserve resources	Come to appreciate the need to conserve resources
		Recognize how the action of people may impact upon environments	

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Strand: Environmental Awareness and Care **Strand Unit: Caring for my locality/Caring for the environment (3rd – 6th)**

Infants	First and second	Third and fourth	Fifth and sixth
Develop a sense of responsibility for taking care of and improving the environment	Realise that there is both an individual an a community responsibility for taking care of the environment	Realise that there is a personal and community responsibility for taking care of the environment	Come to appreciate individual, community and national responsibility for environmental care
Identify, discuss and implement simple strategies for improving and caring for the environment	Identify, discuss and implement simple strategies for improving and caring for the environment	Examine a number of ways in which the local environment could be improved or enhanced	Participate in activities that contribute to the enhancement of the environment
	Identify, discuss and implement simple strategies for protecting, conserving and enhancing the environment		
Observe, discuss and appreciate the attributes of the local environment	Identify, discuss, and appreciate the natural and human features of the local environment		
Appreciate that people share the environment with plants and animal life	Begin to recognize that people, animals and plants depend on one another		
	Observe and develop an awareness of living things in a range of habitats in local and wider environments		
	Observe the similarities and differences among plants and animals in different local habitats		
	Develop an awareness that air, water, soil, living and non-living things are essential to the environment		
	Become aware of ways in which the environment can be polluted or harmed	Identify and discuss a local, national or global environmental issue	Identify and discuss a local, national or global environmental issue

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Strand: Environmental Awareness and Care

Strand Unit: Science and the environment

Infants	First and second	Third and fourth	Fifth and sixth
		Begin to explore and appreciate the application of science and technology in familiar contexts	Appreciate the application of science and technology in familiar contexts
		Identify some ways in which science and technology contributes positively to society	Examine some ways in which science and technology have contributed positively to the use of Earth's resources
			Recognise the contribution of scientists to society
		Recognize and investigate human activities which have positive or adverse effects on local and wider environments	Recognize and investigate aspects of human activities that may have positive or adverse effects on environments