Cycle 2 - Science Planning

MY WORLD WITHIN AND AROUND ME			
Year 5 – Group 5		**Year 6 – Group 6**	
TERM 1		**TERM 1**	
***My Body* (see curriculum *Humans*)**		***Living Things* (see curriculum *Humans*)**	
	#Target Behaviour/s		#Target Behaviour/s
• Describe how the human body is organized into cells, tissues, organs and organ systems. (*Bright Ideas 3 P.10-15 focus the eye; P.16-17 focus bones and joints; P.19-20 focus muscles; P.26-28 focus teeth; P.28-29 focus stomach and lungs*) • Describe ways in which the systems of the human body interact. (*Bright Ideas 3 P.22-24 focus movement*) ***(see Health curriculum)*** • Explain the role of healthy eating practices as related to body shape and size. (*Bright Ideas 3 P.30-31 focus food and health*) ***(see Phys. Ed. curriculum)*** • Demonstrate considerable understanding of the importance of being physically active. (*Bright Ideas 3 P.24-25 focus keeping fit*)	TB 4.3(3) TB 5.3(2) TB 2.2(4) TB 1.1(2)	• Describe how the human body is organized into cells, tissues, organs and organ systems. (*Bright Ideas 4 P.14-15 focus review of the senses; P.16-17 focus touch; P.18-19 focus the skin and skin care; P.20-21 focus taste and the tongue; P.22-23 focus the nose*)	TB 4.3(3)
***Living Things* (see curriculum *Animals*)**			
• Compare and contrast the life cycles of different animals the environment. (*Bright Ideas 3 P.41-42 focus how young animals develop*) • Classify animals. (*Bright Ideas 3 P.36-40 focus random criteria, vertebrates and invertebrates*)	TB 4.2(2) TB 6.2(1)	• Identify the structures of animals and their functions.(*Bright Ideas 4 P.24 focus animal senses; P.24 focus animal use of sight, sound and camouflage; P.28-29 focus animal movement; P.31-33 focus animal reproduction*)	TB 4.2(1)

***Living Things** (see curriculum **Plants**)*			
• Explain the various processes that plants undertake. • Classify plants. (*Bright Ideas 3 P.45-46 focus flowering and non-flowering plants; P.47-48 focus mosses, ferns and fungi; P.49 focus microbes*)	TB 4.1(2) TB 6.1(1)	• Identify the structures of a plant and their functions. (*Bright Ideas 4 P.34-35 focus parts of flowering plants*) • Explain the various processes that plants undertake. (*Bright Ideas 4 P. 37-38 focus sexual and asexual reproduction*)	TB 4.1(1) TB 4.1(2)
		(see curriculum The Environment)	
		• Define and differentiate between different types of environments. (*Bright Ideas 4 P.46-48 focus on the sea*) • Identify the relationship between living and non-living elements of local and other environments. (*Bright Ideas 4 P. 40-41 focus review food and food chains; P.42 focus on food webs*) • Demonstrate how organisms react and adapt to changes their environment. (*Bright Ideas 4 P.26-27 focus plant response to light and gravity; P. 43-44 focus changes from the past to the present*) • Identify ways in which human activities have changed their environment and/or affected other organisms. (*Bright Ideas 4 P.49-51 focus pollution of the sea*)	TB 5.4(1) TB 5.4(2) TB 5.4(3) TB 5.4(4)

UNDERSTANDING MY WORLD			
Year 5 – Group 5		**Year 6 – Group 6**	
TERM 2		**TERM 2**	
(see curriculum The Environment)	#Target Behaviour/s	***Machines (see curriculum Force and Motion)***	#Target Behaviour/s
• Define and differentiate between different types of environments. (*Bright Ideas 3 P.59 focus the pond; practical work on investigation of the environment*))	TB 5.4(1)	• Investigate the effects of force on the movement of objects. (*Bright Ideas 4 P.57-58 focus levers and movement of loads; P.61-62 focus pulleys; P.65 focus on gear speeds; P.56-57 focus communal interdependence of living things*)	TB 9.1(3)
• Identify the relationship between living and non-living elements of local and other environments. (*Bright Ideas 3 P.34 focus living and non-living things; P.35 focus life characteristics; P.51 focus on producers and consumers in food chains; P.56-57 focus communal interdependence of living things*)	TB 5.4(2)	• Investigate simple machines and their uses. (*Review simple machines; Bright Ideas 4 P.54 focus definition; P.55-56 focus inclined plane; P.57 focus levers; P.59 focus pulleys; P. 62-63 focus screws; P.64 focus gears; P.67-68 focus complex machines; P.69-71 focus the body as a machine*)	TB 9.1(4)
• Demonstrate how organisms react and adapt to changes their environment. (*Bright Ideas 3 P.62-63 focus habitats and adaptations; P.65-66 weather and adaptations*)	TB 5.4(3)		
• Identify ways in which human activities have changed their environment and/or affected other organisms. (*Bright Ideas 3 P.61 focus pond pollution; P.68-69 focus review pollution; P. 71 focus habitat destruction in the rainforests, coral reefs and wetlands; P.75-77 global warming*)	TB 5.4(4)		
• Show appreciation for the need to conserve resources in the environment. (*Bright Ideas 3 P.73-74 focus conservation*	TB 5.4(5)		
(see curriculum The Structure and Composition of the Earth)			
• Describe the composition of rock and soils. (*Bright Ideas 3 P.81-82 focus soil investigation*)	TB 2.1(4a)		
• Compare and contrast the different types of rocks	TB 2.1(4b)		

and soils. (*Bright Ideas 3 P.84-85 focus soil types; P.86-87 focus the effects of water on different soil types*)			
***Matter and Materials* (see curriculum *Matter*)**		***Water and Air* (see curriculum *The Water Cycle*)**	
• Define matter. (*Bright Ideas 3 P.90 focus definition and characteristics; P.91-94 practical work on measuring matter by mass and volume*) • Identify the structure and properties of different materials. (*Bright Ideas 3 P.109-111 focus on natural resources*) • Classify materials as the different states of matter, defining atoms, elements, molecules, compounds, solutions and mixtures. **(***Bright Ideas 3 P.100-101 focus on mixtures and solutions; P.103-105 focus on separating mixtures*) **(see curriculum *The Water Cycle*)** • Recognize and demonstrate the states of water. (*Bright Ideas 3 P.98-99*) • Classify water on Earth. (*Bright Ideas 3 P.106-108*)	TB 7.1(1) TB 7.1(2) TB 7.1(3) TB 1.2(1) Tb 1.2(3)	• Recognize and demonstrate the states of water. (*Bright Ideas 4 P.74-75 practical work on properties of water; P.76-77 focus review mixing and dissolving)* • Describe, diagram and interpret the water cycle in terms of the processes involved. (*Bright Ideas 4 P.80-81*) • Observe and collect data to show the importance of water to daily life. (*Bright Ideas 4 P.78-79; P. 82 focus water sources; P. 84-85 focus on comparing water from different sources [hard or soft]*) • Collect data to show human impact on the water cycle. (*Bright Ideas 4 P.83 focus pollution ; P.88-89 focus purification, treatment and desalination; P.86-87 focus water and disease*) **(see curriculum *Weather*)** • Define 'atmosphere' and matter. (*The **atmosphere** is a mixture of gases that surround the Earth commonly recognized as the air. Bright Ideas 4 P.91 focus properties of air; P.93-94 focus on the gases that make up the air; P.95-96 focus on uses the gases from the air*) ***(see curriculum The Environment)*** • Identify ways in which human activities have changed their environment and/or affected other organisms. (*Bright Ideas 4 P.97-99 focus air and disease; P.100-101 focus air pollution; P.102-103 focus cleaning the air; P.104-105 global warming*)	Tb 1.2(1) TB 1.2(2) TB 1.2(4) TB 1.2(5) TB 1.1(1) TB 5.4(4)

THE WONDERS OF THE EARTH			
Year 5 – Group 5		**Year 6 – Group 6**	
TERM 3		**TERM 3**	
Structures and Machines (see curriculum Force and Motion)	**#Target Behaviour/s**	***Materials and Our Environment (see curriculum The Structure and Composition of the Earth)***	**#Target Behaviour/s**
• Define force and motion. (*Bright Ideas 3 P.114 top)* • Investigate the effects of force on the movement of objects. (*Bright Ideas 3 P.114-117 focus practical work with effects of force on beams, boxes and the relationship between shape and strength*) • Investigate simple machines and their uses. (*Bright Ideas 3 P.119 focus definition of a machine and different types; P.120 focus on levers and introduction of terms '**effort**', '**load**' and '**pivot**'; P.122-123 focus ramps and wedges; P.125-126 focus wheels and cranks*)	TB 9.1(1) TB 9.1(3) TB 9.1(4)	• Describe how landforms are created by a combination of constructive and destructive forces. (*Bright Ideas 4 P.116-117 focus volcanoes; P.131 focus loss of soil by forest destruction and poor farming. P. 132 focus on ways to save our soil*) • Demonstrate an understanding that smaller rocks come from breaking and weathering of larger rocks. (*Bright Ideas 4 P.128 weathering; P.129 decay*) • Describe the composition of rock and soils. (*Bright Ideas 4 P.109-110 focus rocks; P.124 focus soils*) • Compare and contrast the different types of rocks and soils. (*Bright Ideas 4 P.111-113 focus testing rocks; P. 114-115 focus types of rock and their properties; P. 124 focus soils; P.125-126 focus comparing soil samples, investigating composition of soil and soil drainage*)	TB 2.1(2b) TB 2.1(3a) TB 2.1(4a) TB 2.1(4b)
Energy and Space (see curriculum Energy)		***Energy, Matter and Space (see curriculum Energy)***	
• Identify the types/forms of energy. (*Bright Ideas 3 P.130 focus static electricity; P.136 focus solar energy*) • Identify the sources of energy.(*Bright Ideas 3 P.131 focus static electricity*) *making circuits*	TB 8.1(2) TB 8.1(3)	• Identify the types/forms of energy. (*Bright Ideas 4 P.135*) • Explain how energy is transferred from one form/type to another. (*Bright Ideas 4 P.136*) • Compare and contrast methods of heat transfer.	TB 8.1(2) TB 8.1(5) TB 8.1(6)

• Describe how humans utilize energy. (*Bright Ideas 3 P.132-133 focus electricity and using circuits; P.134-135 focus on good and bad conductors of electricity; P.137-138 focus on uses of solar energy*) ***(see curriculum the Solar System)*** • Describe the Solar System. (*Bright Ideas 3 P.144*) • Identify the planets in the Solar System and their position in relationship to each other. (*Bright Ideas 3 P.145*) • Define the role of the sun and moon in Earth's seasons.(*Bright Ideas 3 P.139-141 focus Sun rise and set; P.142-143 focus seasons*)	TB 8.1(7) TB 3.1(1) TB 3.1(2**)** TB 3.1(7)	(*Bright Ideas 4 P.140-141 focus on heating and cooling; P.137-138focus on temperature and thermometers*) **(see curriculum *Matter)*** • Define matter. (*review Bright Ideas 4 P.142*) • Identify the structure and properties of different materials. (*Bright Ideas 3 P.147-148 focus on natural and artificial materials and their properties; P. 149-150 focus on choosing the right material*) • Classify materials as the different states of matter, defining atoms, elements, molecules, compounds, solutions and mixtures. **(***Bright Ideas 4 P.142-143 focus on properties of the different states of matter; P.144-145 focus changing matter from one state to another*) ***(see curriculum the Solar System)*** • Describe the Solar System. (*Bright Ideas 4 P.151-152 review*) • Identify the planets in the Solar System and their position in relationship to each other. (*Bright Ideas 4 P.153-154*) • Compare and contrast the characteristics of the different parts of the Solar System. (*Bright Ideas 4 P.155-156 focus asteroids, comets and meteors*)	TB 7.1(1) TB 7.1(2) TB 7.1(3) TB 3.1(1) TB 3.1(2**)** TB 3.1(5)

MY WORLD WITHIN AND AROUND ME			
Year 7 – Group 7		**Year 8 – Group 8**	
TERM 1		**TERM 1**	
***Growth and Nutrition* (see curriculum *Humans*)**		***Sight and Sound* (see curriculum *Humans*)**	
	#Target Behaviour/s		#Target Behaviour/s
• Describe how the human body is organized into cells, tissues, organs and organ systems.(*Bright Ideas 5 P.90-91 focus the digestive system*) ***(see Health curriculum)*** • Identify factors that affect the nutritional value of foods.(*Bright Ideas 5 P.78-80 focus food and nutrition; P.81-83 focus grouping foods by nutrients*) • Use the Food Pyramid Guide, and food labels to plan healthy meals and snacks.(*Bright Ideas 5 P.84-88 focus a balanced diet*) • Explain the role of healthy eating practices as related to body shape and size. (*Bright Ideas 5 P.87-89 focus food and energy; P.93-94 focus food deficiency diseases*)	TB 4.3(3) TB 2.1(3) TB 2.2(1) TB 2.2(4)	• Describe how the human body is organized into cells, tissues, organs and organ systems. (*Bright Ideas 6 P.11-13 focus the eye; P.14-16 focus correcting eye defects; P.17-18 focus eye care and protection; P.19-20 focus optical illusions; P.29-30 focus the ear; P.31-32 focus ear problems and care*) ***(see curriculum Energy)*** • Explain how energy is transferred from one form/type to another. (*Bright Ideas 6 P.21-23 focus reflection; P.24-26 focus refraction; P.27-28 focus light and different materials; P.33-35 focus sound waves; P.36-37 focus musical instruments; P.39-41 focus sound reflection and absorption*)	TB 4.3(3) TB 8.1(5)
Living Things (see curriculum Animals)		***Systems in Plants and Animals(see curriculum Plants)***	
• Compare and contrast the life cycles of different animals the environment. (*Bright Ideas 5 P.41-42 focus how young animals develop*) • Classify animals. (*Bright Ideas 5 P.98-100 focus classifying living things*) ***(see curriculum Plants)*** • Explain the various processes that plants undertake. (*Bright Ideas 5 P.101-102 focus photosynthesis*) • Classify plants. (*Bright Ideas 5 P.98-100 focus classifying living things*)	TB 4.2(2) TB 6.2(1) TB 4.1(2) TB 6.1(1)	• Identify the structures of a plant and their functions. (*Bright Ideas 6 P.44-45 focus organs and systems of plants; P.47-49 focus root systems; P.50-52 focus shoot systems; P.53-55 focus leaves; P.56-58 focus flowers, fruits and seeds*) ***(see curriculum Humans)*** • Describe how the human body is organized into cells, tissues, organs and organ systems.(*Bright Ideas 6 P.59-60 focus systems in humans and animals; P62-63 focus human skeleton; P.65-66 review muscles; P.68-70 focus circulatory system;*	TB 4.1(1) TB 4.3(3)

(see curriculum The Environment) • Define and differentiate between different types of environments.(*Bright Ideas 5 P.105-107 focus on ecosystems*) • Identify the relationship between living and non-living elements of local and other environments. (*Bright Ideas 5 P.103-104 focus review food chains*) • Demonstrate how organisms react and adapt to changes their environment. (*Bright Ideas 5 P.108-109 focus adaptation and survival*)	TB 5.4(1) TB 5.4(2) TB 5.4(3)	*P.71-73 focus excretory system; P.74-76 focus reproductive system*) • Describe ways in which the systems of the human body interact. (*Bright Ideas 6 P.66-67 review focus locomotion*) ***(see Health curriculum)*** • Define puberty. (*Bright Ideas 6 P.77*) • Discuss the changes that take place during puberty. (*Bright Ideas 6 P.77-79 focus puberty*)	TB 5.3(2) TB 3.3(1) TB 3.3(2)
		Health (see Health curriculum)	
		• Define and list types of pathogens and ways they enter the body. (*Bright Ideas 6 P.85- 87 focus microbes*) • Distinguish between communicable and non-communicable diseases. (*Bright Ideas 6 P.82, 84 focus communicable diseases*) • Identify habits that promote good health and prevent disease. *Bright Ideas 6 P.83)* • Explain how to preserve, store and cook food in order to prevent illness. (*Bright Ideas 6 P.88-90 focus food preservation*) • Develop an understanding of the importance of immunization. (*Bright Ideas 6 P.91-92 focus vaccination*) • Differentiate between the use and misuse of medicines (including natural remedies) (*Bright Ideas 6 P.93-95 focus drugs*) • Define and explain substance abuse and addiction and explain the difference between addiction and dependence. (*Bright Ideas 6 P.96-97 focus addiction and effects*) • Differentiate between legal and illegal drugs.	TB 6.1(1) TB 6.1(2) TB 6.1(3) TB 2.3(2) TB 6.2(3) TB 4.1(1) TB 5.1(1) TB 5.1(2)

	(*Bright Ideas 6 P.100 focus drugs and sports*) • Can identify drugs that harm the body. (*Bright Ideas 6 P.96 focus dangerous drugs*) • Identify methods of resisting peer/commercial pressure to use addictive products or engage in addictive behaviors. (*Bright Ideas 6 P.98-99 focus drug issues*)	TB 5.1(3) TB 5.3(2)

UNDERSTANDING MY WORLD			
Year 7 – Group 7		**Year 8 – Group 8**	
TERM 2		**TERM 2**	
Weather and Climate(see curriculum Weather)	#Target Behaviour/s	***The Environment***	#Target Behaviour/s

• Define 'atmosphere'. (*Bright Ideas 5 P.12-13 focus earth and its atmosphere*)
• Describe and record the daily weather conditions. (*Bright Ideas 5 P.14-16 focus weather conditions and maps*)
• Identify and use a variety of weather instruments. (*Bright Ideas 5 P.17-19*)
• Observe and describe how daily weather affects the activities of people and vice versa. (*Bright Ideas 5 P.23-27 focus global warming, the hole in the ozone layer*)
• Define 'hurricane'
  ○ Categories (*Bright Ideas 5 P.21*)
  ○ Preparedness
  ○ Effects
• Describe the difference between weather and climate
• Identify and describe the different climatic zones in the world. (*Bright Ideas 5 P.20-22 focus Caribbean climate*)
	TB 1.1(1)
	TB 1.1(3)
	TB 1.1(4)
	TB 1.1(5)
	TB 1.1(6)
	TB 1.1(9)
	TB 1.1(10)
		• Define and differentiate between different types of environments. (*Bright Ideas 6 P.103-104 focus on the rainforest*)
		• Identify ways in which human activities have changed their environment and/or affected other organisms. (*Bright Ideas 6 P.106-107 focus deforestation; P.109-110 focus threats to the environment*)
		• Show appreciation for the need to conserve resources in the environment. (*Bright Ideas 6 P.111-113 focus conservation; P.114-116 focus reduce, reuse, recycle; P.117-119 focus sustainable development*)
			TB 5.4(1)
			TB 5.4(4)
			TB 5.4(5)

Forces (see curriculum Force and Motion)		***Measurement and Motion***	
• Define force and motion. (*Bright Ideas 5 P.31*) • Identify, describe and demonstrate different types of force. (*Bright Ideas 5 P. 31-32 focus effects of force*) • Investigate the effects of force on the movement of objects. (*Bright Ideas 5 P.34-35 focus force and*	TB 9.1(1) TB 9.1(2) TB 9.1(3)	***(see curriculum Basic Science and Technology Tools)*** • Select and use appropriate tools to carry out scientific investigations. (*Bright Ideas 6 P.123-125 focus measuring mass; P.126-128; P. 126-128 focus*	TB 13.1(2)

transport; P.37-38 focus force and machines; P. 40-41 focus upthrust [floating and sinking]) • Describe and demonstrate the effects of friction on motion. (*Bright Ideas 5 P.45-47 focus investigating friction; P.48-49 focus using friction*) ***(see curriculum Energy)*** • Recognize that energy can be used to do work. (*Bright Ideas 5 P.43 focus scientific definition of work; P.44 focus work and energy*)	TB 9.1(5) TB 8.1(1)	*on the measuring volume*) ***(see curriculum Force and Motion)*** • Define force and motion. (*Bright Ideas 6 P.129-131 focus types of motion*) • Identify, describe and demonstrate different types of force. (*Bright Ideas 6 P.132-134 focus relationship between forces, weight, motion and mass*) • Investigate the effects of force on the movement of objects. (*Bright Ideas 6 P.135-137 focus on energy and motion*)	TB 9.1(1) TB 9.1(2) TB 9.1(13
Light and Sound (see curriculum Energy)			
• Identify the types/forms of energy. (*Bright Ideas 5 P.116-117 focus light energy; P.124-125 focus sound energy*) • Identify the sources of energy. (*Bright Ideas 5 P.116 focus sources of artificial light*) • Explain how energy is transferred from one form/type to another. (*Bright Ideas 5 P.118-119 focus light and different materials; P. 121-123 focus shadows; P.126-127 hearing sounds; P.128-130 focus pitch of musical instruments; sound pollution and safety*)	TB 8.1(2) TB 8.1(3) TB 8.1(5)		

THE WONDERS OF THE EARTH			
Year 7 – Group 7		**Year 8 – Group 8**	
TERM 3		**TERM 3**	
Energy	#Target Behaviour/s	***Magnetism and Electricity (see curriculum Force and Motion)***	#Target Behaviour/s
• Identify the types/forms of energy. (*Bright Ideas 5 P.55 focus energy forms*) • Identify the sources of energy. (*Bright Ideas 5 P.53-54*) • Compare and contrast kinetic and potential energy. (*Bright Ideas 5 P.56-57 focus storing energy*) • Explain how energy is transferred from one form/type to another. (*Bright Ideas 5 P.55 focus energy transformations*) • Compare and contrast methods of heat transfer. (*Bright Ideas 5 P.58-59 focus heat energy; P.65-67 focus how heat travels; P. 68-69 focus conductors and insulators*) • Describe how humans utilize energy. (*Bright Ideas 5 P.70-72 focus heat in the home; P.73-73 heat safety*)	TB 8.1(2) TB 8.1(3) TB 8.1(4) TB 8.1(5) TB 8.1(6) TB 8.1(7)	• Identify, describe and demonstrate different types of force. (*Bright Ideas 6 P 140-141 focus magnets; P.143-144 focus magnetic poles; P.145-147 making magnets; P.148-149 focus use of magnets*) ***(see curriculum Energy)*** • Identify the sources of energy. (*Bright Ideas 6 P.157-158 focus sources of electricity; P.160-162 focus alternative energy sources*) • Describe how humans utilize energy. (*Bright Ideas 6 P.151-155 focus electrical circuits; P.163-165 focus conserving electricity*)	TB 9.1(2) TB 8.1(3) TB 8.1(7)
The Earth in Space (see curriculum The Solar System)		***The Earth and Space (see curriculum The Structure and Composition of the Earth)***	
• Compare and contrast the characteristics of the different parts of the Solar System. (*Bright Ideas 5 P.143-145 focus stars and galaxies*) • Define the role of the sun and moon in Earth's seasons. (*Bright Ideas 5 P.133-134 focus day, night and seasons; P. 135-136 focus moon phases; P.137-*	TB 3.1(5) TB 3.1(7)	• Describe how landforms are created by a combination of constructive and destructive forces. (*Bright Ideas P.168-169 focus earthquakes; P.171-173 focus earthquake safety and tsunamis*)	TB 2.1(2b)

138 focus tides; P.140-142 focus solar and lunar eclipses)		***(see curriculum the Solar System)*** • Identify the planets in the Solar System and their position in relationship to each other. (*Bright Ideas 6 P.174-178 focus planet size*) • Compare and contrast the characteristics of the different parts of the Solar System. (*Bright Ideas 6 P.177-179 focus observing the universe*)	TB 3.1(2) TB 3.1(5)

Curriculum Theme TECHNOLOGY SCIENCE

Target Behaviours	Where Addressed			
	Student Book 3	**Student Book 4**	**Student Book 5**	**Student Book 6**
10.1(1) Define and describe technology.	Not addressed directly.			
10.1(2) Identify famous inventors and their inventions.	Page 6	Page 6	Page 6	Page 6 - 7
11.1(1) Explain how technology tools have been or can be used to meet the needs of society.	Unit 3	Units 2 and 5	Units 1, 3 and 7	Units 5 and 6
11.1(2) Construct and test a technology enhanced tool, mechanism or structure.	Unit 6	Unit 3	Units 1 and 3	Units 5 and 6
12.1(1) Identify examples of technology's positive and/ or negative effects on society.	Unit 3	Units 1, 3 and 4	Units 1 and 3	Units 4 and 6

Curriculum Theme BASIC SCIENCE AND TECHNOLOGY SKILLS

Target Behaviours	Where Addressed			
	Student Book 3	**Student Book 4**	**Student Book 5**	**Student Book 6**
Scientific Method				
13.1(1) Identify the steps of the scientific method	Page 6	Page 8 - 9	Page 6	Page 6
a. Observe and record observations b. Formulate questions that lead to scientific investigations c. Make predictions based on observations d. Design a 'fair test' to investigate a prediction	Units 1 – 6 Unit 6 Units 1, 4 and 5 Units 2, 4 and 5	Units 1, 3, 4 and 5 Units 2 and 3 Units 3 and 5	Units 1-7 Units 2, 3 and 5 Unit 5 Units 2 - 5	Units 1-7 Unit 1 Units 5 and 6
13.1(2) Select and use appropriate tools to carry out scientific investigations	Units 3 and 4		Unit 1	Unit 5
13.1(3) Demonstrate an understanding of the importance of safety when conducting investigations and experiments	Page 8 – 9, Unit 1	Page 11 Units 1 and 5	Page 9, Units 2 and 3	Page 9
14.1(1) Define scientific research	Page 6	Page 6	Page 6	Page 6
14.1(2) Explain how scientists work	Pages 6 - 7	Page 6	Page 6 – 7, Unit 1	Page 6 – 7, Unit 3
14.1(3) Demonstrate an understanding that the results of similar scientific investigations may differ			Unit 2	Unit 2
Technology Skills				
14.1(4) Compare and contrast science and technology.	Not addressed directly.			
15.1(1) Demonstrate an understanding of the nature and characteristics of a variety of media and communication systems.		Unit 4		
15.1(2) Formulate and test hypotheses.	Units 4, 5 and 6	Unit 3	Units 2 and 5	Units 1, 4, 5, and 6
15.1(3) Analyze data collected during investigation and draw conclusions.	Units 1, 2, 3, 4, 5 and 6	Units1, 2 and 5	Units 2, 3, 5, 6 and 7	Page 8 Units
15.1(4) Communicate results of scientific inquiry in a variety of ways including the use of information and design technology.	Units 1, 2, 4, 5 and 6	Units 1, 3, 4 and 5	Units 1, 2, 3, 4, 5 and 7	Units 1, 2, 3, 4 and 7

APPENDIX

[1]*PROCESS SKILLS*

- ***Classifying:***
    - Identifying properties useful for classifying objects
    - Grouping objects by their properties or similarities and differences
    - Constructing and using classification systems
- ***Communicating:***
    - Constructing and using written reports, diagrams, graphs, or charts to transmit information learned from science experiences
    - Verbally asking questions about, discussing, explaining, or reporting observations
    - After an investigation, reporting the question tested, the experimental design used, the results, and conclusions drawn and using tables and graphs where appropriate
- ***Comparing:***
    - Identifying similarities and differences among objects
- ***Controlling Variables:***
    - Changing one factor that may affect the outcome of an event whilst keeping the others constant (the same)
- ***Defining Operationally:***
    - Stating definitions of objects or events in terms of what the object is doing or what is occurring in the event
    - Stating definitions of objects or events based on observable characteristics
- ***Experimenting:***
    - Designing an investigation to test a hypothesis
    - Conducting simple experiments
- ***Hypothesizing:***
    - Identifying questions or statements which can and cannot be tested
    - Ddesigning statements, i.e., questions, inferences, predictions, that can be tested by an experiment

[1] Reference: Mechling, K., Bires, N., Kepler, L., Oliver, D., and Smith, B. (1985) A Recommended Science Competency Continuum for Grades K-6 for Pennsylvania Schools . Harrisburg, PA. Pennsylvania Department of Education

- ***Inferring:***
    - Suggesting explanations for events based on observations
    - Distinguishing between an observation and an inference
- ***Interpreting Data:***
    - Organizing and stating in his/her own words information derived from a science investigation
    - Revising interpretations of data based on new information or revised data
- ***Investigating:***
    - Finding out what happens when certain things are done
- ***Manipulating:***
    - Handling objects or materials
    - Comparing and ordering objects by length, area, weight, volume, etc.

Measuring:

- Measuring properties of objects or events by using standardized units of measure

- ***Observing:***
    - Identifying properties of an object, i.e., shape, colour, size, and texture
    - Using indirect methods, i.e., hand lenses, microscopes, thermometers, to observe objects and events
    - Observing objects or events by counting, comparing, estimating, and measuring
- ***Predicting:***
    - Proposing results or outcomes based on observation and inference
- ***Using Space / Time Relation:***
    - Describing an object's position i.e., above, below, beside, etc., in relation to other objects
    - Describing the motion, direction, spatial arrangement, symmetry, and shape of an object compared to another object
    - Describing events in terms of sequence or duration or period of time compared to other events
    - Measuring volume, mass, weight, temperature, area, length, and time, using appropriate units and appropriate measuring instruments

[2]SAMPLE SCIENCE PROCESS SKILLS ACTIVITIES

Classifying

- Classify collected plants according to their phylum and/or class.

Communicating

- Communicating involves the sharing of information through words, pictures, graphs and diagrams. Students can make a poster to share information about the Wright Brothers and their inventions

Comparing

- Compare the weights of students in the class and graph the results

Controlling Variables

- In first trial, raise a pendulum and release it from a height of 100 cm. In second trial, raise and release the same pendulum from a height of 60 cm. In third trial, raise and release the same pendulum from a height of 20 cm. Do the trials while keeping two variables the same which are the string length (100 cm) and the bob size. Have pupils identify which variable is being tested and which variables are being controlled.

Defining Operationally

- The process by which a scientific term is defined according to what must be done and what should be observed in order to identify the concept. For example, we can define what "strength" is. If we decide that strength is the weight that a paper bag can hold without tearing or bursting, then we can make meaningful comparisons when we test different paper bags made of various materials in a variety of ways.
- Pupils can practice making operational definitions using a simple circuit. They will need a battery, flashlight bulb and insulated wire with both ends stripped. Have students look at a diagram of a simple closed circuit. Set up the battery, bulb and wire so that the bulb lights. Have them write their definition of a closed circuit based on what they did. Next, let then look up the word circuit in their dictionary and write it down. Have them discuss how their definition is different from the one given in the dictionary. Ask them how their definition communicated what the closed circuit did. How did making a closed circuit help them define it.

[2] Note that these are all simple sample activities that help to develop and teach the process skills. You will need to decide the appropriateness of each for whole class or small group instruction as well as pose the right questions for each skill.

Hypothesizing

- Hypothesize about how to solve a problem.

First encourage hypothesizing (guessing). Then use several objects - soap, a dry sock, a wooden block, sponge, and a block. Ask children to guess which objects will float when dropped into water in a tub. Then drop the objects in the water, one by one, to see what happens. Have them compare each result with their hypotheses.

Inferring

- Identify various internal body parts (heart, lungs, stomach and brain). After discussing the body's use of these organs, students will infer where these organs are located within the body. To record this information, students will make a traced model of the outer body and position cut-outs of internal organs.

Interpreting Data

- Collect, record and interpret data about the beat of the heart just before and after exercise. Have children create improvised devices for listening to the heart such as using empty napkin rolls. Select six children whose hearts they will listen to before exercising. Have the children perform various rapid exercises in the presence of the others. Thereafter, let them listen to their hearts again. Have them interpret the before and after data.

Investigating

- Pupils can investigate what happens to water when it is boiled for a long time.

Manipulating

- Allow children to engage in the use and manipulation of various hands-on materials.

Measuring

- Students can determine how many pitchers of water are needed to let each student drink eight ounces of water after a physical education class.
- Students create a simple classroom graph showing the rate of growth when germinating seeds.

Observing

- Observe the physical properties of water in different states (solid, liquid, gas)
- Various species of birds are commonly found around our island especially near bodies of water. Take a nature walk and look for them. Ask children to observe their size and colour patterns they display, what they eat, what they like to stand on, and how they fly.

Predicting

- Predict, identify and record data regarding what plants need to survive by observing plants being grown under different conditions. First encourage children to predict what will happen. Use two similar, healthy plants. Ask the children to take turns watering one plant while ignoring the other for a week or two. Keep both plants in the same place. Have them check the results of the experiment and compare this with their prediction.

Using Space / Time Relations

- Have students engage in activities whereby they must tell the position of one object in relation to others. (Over, under, between etc.)
- Sequence the events of a water experiment

Experimenting

- This involves making a plan to test a hypothesis. Students can make a plan to test which magnet is stronger. First have them write a hypothesis about which magnet will pick up more paper clips. Let them design their experiment. The only variable that changes is the magnet. The paper clips must remain constant. Students can design a chart to show their results. Have them perform the experiment. Let them compare their hypothesis with the results through discussion.

3

IMPLEMENTATION OF SCIENCE SKILLS

Process Skills	Students/Classroom	Scientists/Real World
Observe	use your senses	computers, microscopes, senses
Experiment	change something watch what happens	manipulate and control variables
Collaborate	other in classroom	other scientists
Record	science journals and notebooks	field notes, data sheets, computer
Measure	thermometers, lab equipment, etc.	scientific instruments
Sort/Classify	color, size, shape, weight	classification keys, field guides
Compare	Which one is biggest? Which one went the farthest? etc.	change over time, change in conditions
Analysis and Sharing	Why did this happen? tell others…	data analysis tell others

[3] Taken from North American Division of Seventh-day Adventists Science Curriculum Guide