

2021 Annual Teaching Plan
Natural Sciences and Technology
Grade 6

Life and Living

Term 1 45 days	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10		
CAPS Topic	Life Cycles (1 week)	Photosynthesis (2 ½ weeks)			Nutrients in food (1 ½ weeks)		Nutrition (1 ½ weeks)		Food chains (1 ½ weeks)		Ecosystems and Food webs (2 weeks)	
Core Concepts, Skills and Values	<ul style="list-style-type: none"> Growth and development 	<ul style="list-style-type: none"> Plants and food Plants and air 			<ul style="list-style-type: none"> Food Groups 		<ul style="list-style-type: none"> Balanced diets 		<ul style="list-style-type: none"> Food and feeding 		<ul style="list-style-type: none"> Different ecosystems Living and non-living things in ecosystems Food webs 	
Requisite Pre-Knowledge	<ul style="list-style-type: none"> Grade 4: Life processes Grade 4: Energy and Energy transfer Grade 5: Food chains Grade 5: Life Cycles 											
Resources (other than textbook) to enhance learning	<ul style="list-style-type: none"> Pictures of different stages in the development of various plants and animals 	<ul style="list-style-type: none"> Glucose powder, maize flour, iodine solution, plastic droppers, Examples of foods such as cooked rice, flour, potato, bread, oil, boiled egg, cheese. Video clips from the internet 			<ul style="list-style-type: none"> Examples of different foods representing the different food groups and food packaging 		<ul style="list-style-type: none"> Lists of different diets Pictures and information about food-related illnesses 		<ul style="list-style-type: none"> Pictures of various plants and animals 		<ul style="list-style-type: none"> Pictures of ecosystems such as rivers, mountains, sea, rocky shore, ponds, wetlands, grasslands, forests, and deserts 	
Informal Assessment	<ul style="list-style-type: none"> Explain the 4 stages in the life cycle of a flowering plant. Describe the different stages in the life cycle of an animal 	<ul style="list-style-type: none"> Explain and illustrate how plants make food. Compare glucose sugar (such as glucose sweets) and starch (such as maize flour) according to their taste and colour. Test various foods for the presence of starch with iodine solution (e.g. cooked rice, flour, potato, bread, oil, boiled egg, cheese, etc.) 			<ul style="list-style-type: none"> Classifying food into the different food groups, namely, Carbohydrates, Proteins and Fats and oils, vitamins, and minerals. State reasons why each food group is important in our diet. Read labels on food packaging to look for the nutrients and/or the additives in the food. Explain if each of the additives make these products healthier or less healthy to eat? Carefully study various diets to evaluate if they contain all the food groups / balanced diet? Explain why different portions of the different food groups are necessary for a balanced diet Discuss various diseases caused by an unhealthy diet such as tooth decay, obesity, diabetes or deficiency diseases. 		<ul style="list-style-type: none"> Describe how each living thing gets food and how energy is passed from one organism to the next. Sequence plants and animals to make up a proper food chain in which the energy is transferred from one organism to the next with up to four organisms each, describing their relationships. Classify the animals according to their feeding relationships (as herbivores, omnivores, carnivores, scavengers or decomposers) 		<ul style="list-style-type: none"> Describe different types of ecosystems on our planet. Identify an ecosystem, describe, and draw the feeding relationships (food webs) within it. Investigate an ecosystem in or near the school grounds. Mark out the area with the sticks and string using the quadrant method, ensuring that you do not damage any of the plants and animals. Study both the living and non-living thing within the ecosystem. Identify the possible threats to this ecosystem and possible ways to overcome them. 			
SBA (Formal Assessment)	<ul style="list-style-type: none"> Practical/Investigation Test 											

Matter and Materials

Term 2 51 days	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
CAPS Topic	Solids, Liquids and gases (1 week)	Mixtures (1 week)	Solutions as special mixtures (2 ½ weeks)		Dissolving (1 week)	Mixtures and water resources (2 ½ weeks)		Processes to purify water (2 weeks)		
Core Concepts, Skills and Values	<ul style="list-style-type: none"> Arrangement of particles 	<ul style="list-style-type: none"> Mixtures of materials 	<ul style="list-style-type: none"> Solutions Soluble substances Saturated solutions Insoluble substances 		<ul style="list-style-type: none"> Rates of dissolving 	<ul style="list-style-type: none"> Water pollution Importance of wetlands 		<ul style="list-style-type: none"> Clean water 		
Requisite Pre-Knowledge	Grade 4: Materials around us and Solid materials Grade 5: Processing materials and Processed materials									
Resources (other than textbook) to enhance learning	<ul style="list-style-type: none"> Materials: Science diary or workbook, pencils, Video clips from the internet, Laptop / tablets / smart phones, etc. 	<ul style="list-style-type: none"> Materials: Science diary or workbook, pencils, Video clips from the internet, Laptop / tablets / smart phones, etc., examples of materials and substances such as: sand, coins, plastic spoons for scooping, small glass or transparent plastic cup for mixing, sieve (the type used for sieving flour), kitchen towel or paper towel, copper sulphate crystals, matches Perishables: salt, sugar, tea leaves, peanuts, dried beans sweets, curry powder, grated cheese, milk, water, cooking oil, food colouring Laboratory Equipment: beakers, funnels, filter papers, evaporating dishes, tripod stands, stove or Bunsen burners 	<ul style="list-style-type: none"> Laboratory Equipment: glass beakers / small yoghurt tubs / clear containers, stop watch or clock with second hand, thermometers, plastic spoons Materials: Science diary or workbook, pencils, Video clips from the internet, Laptop / tablets / smart phones, etc., fine table salt, coarse rock salt, very hot water (not boiling), tap water (at room temperature), ice water 		<ul style="list-style-type: none"> Laboratory Equipment: Sieves, filter paper, funnels, beakers Materials: Science diary or workbook, pencils, Video clips from the internet, Laptop / tablets / smart phones, etc., etc., containers, kettle, water, purification tablets (if possible), pictures of different polluted water sources, pictures of different wetlands 	<ul style="list-style-type: none"> Sieves, filter paper, funnels, containers, kettle, water purification tablets (if possible) 				
Informal Assessment	<ul style="list-style-type: none"> Draw and explain how particles are arranged in a solid, liquid and gas Identify the three (3) states of matter in everyday life. Describe solids, liquids and gases in terms of the 	<ul style="list-style-type: none"> Explain and demonstrate the different ways in which solids, liquids and gases can be combined to form mixtures. Explain and demonstrate the different ways in which mixtures can be separated such as: sieving and hand sorting. Investigating different solids to see if they dissolve in water including: salt, sugar (soluble substances); sand, mealie meal, flour, maize flour, samp, curry powder, custard powder (insoluble substances) Investigating solutions to see if we can recover the solute by: filtering, settling followed by decanting and evaporating the water (crystallisation) Investigate and make sugar crystals Explain different kinds of mixtures (including solutions) 	<ul style="list-style-type: none"> Investigate the difference between melting and dissolving. Investigate, measure and draw graphs of the time taken to dissolve a solute: in hot or cold water when stirring/shaking or not stirring/shaking 		<ul style="list-style-type: none"> Discuss pollution and where it comes from. Identify three main categories of pollutants found in water and explain how you think they entered / end up in water. Explain why are wetlands so important Research the different wetlands in South Africa. 	<ul style="list-style-type: none"> Design, make and evaluate a system to process and purify dirty water Investigating how to best purify dirty water in class or/and at home. 				

	arrangement of their particles	<ul style="list-style-type: none"> Distinguish between soluble and insoluble substances Recover the solute from the solvent and draw and write about the process 	using coarse or fine salt <ul style="list-style-type: none"> Tell what factors affect the rate of dissolving 		
SBA (Formal Assessment)	<ul style="list-style-type: none"> Practical Task/ Investigation Test 				

Energy and Change

Term 3 52 days	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
CAPS Topic	Electric circuits (2½ weeks)		Electrical conductors and insulators (2 weeks)		Systems to solve problems (2½ weeks)			Mains electricity (3 weeks)		
Core Concepts, Skills and Values	<ul style="list-style-type: none"> A simple circuit Circuit diagrams 		<ul style="list-style-type: none"> Conductors Insulators 		<ul style="list-style-type: none"> Using electric circuits 			<ul style="list-style-type: none"> Fossil fuels and electricity Cost of electricity Renewable ways to generate electricity 		
Requisite Pre-Knowledge	<ul style="list-style-type: none"> Grade 5: Energy and electricity 				<ul style="list-style-type: none"> Grade 5: Stored energy in fuels Grade 5: Energy and Electricity Grade 5: Fossil, Planet Earth and Beyond 					
Resources (other than textbook) to enhance learning	<ul style="list-style-type: none"> Laboratory Equipment: cells/batteries, conducting wires, light bulbs and switches Supplementary Material: Video clips, YouTube videos, Phet Simulation, Pictures. 		<ul style="list-style-type: none"> Laboratory Equipment: cells/batteries, conducting wires, light bulbs and switches Different materials including metal paper clips, nails, wire, steel-wool, coins, plastic, glass, ceramic, cardboard, paper, wood, rubber, chalk, plastic insulated wires, rubber gloves used by electricians, glass and ceramic Supplementary Material: Video clips, YouTube videos, Phet Simulations 		<ul style="list-style-type: none"> Laboratory Equipment: Basic components for a circuit, including components such as cell/s, light bulb/s, conducting wire/s, buzzer/s, and switches Supplementary Material: Video clips, YouTube videos, Phet Simulation 			<ul style="list-style-type: none"> Different Materials: Pictures and video clips of fuels and their various uses Pictures to show how electricity is generated in a coal fired power station Examples of electrical appliances Pictures of renewable ways to generate electricity, including examples of wind power generators, solar power generators, hydro- electric power generators Explain and illustrate using diagrams to show how fossil fuels such as coal were formed 		
Informal Assessment	<ul style="list-style-type: none"> Investigate different ways of making a simple circuit Investigate how a switch works Design and make a switch to control the circuit. Investigate bulbs by comparing torch light bulbs with a light bulb that are used in a light fitting in a house or in your classroom Identify the six parts of a light bulb Draw a circuit diagrams using various components (e.g.; 1 cell and 2 bulbs; 2 cells and 2 bulbs; 3 cells and 3 bulbs; 3 cells, a bulb and an open switch; 1 cell, 2 bulbs and a closed switch (the switch must be in between the bulbs); etc. 		<ul style="list-style-type: none"> Investigate what conductors and insulators are. Test different materials (such as metal paper clips, nails, wire, steel-wool, coins, plastic, glass, ceramic, cardboard, paper, wood, rubber, chalk) in an electric circuit to see if they are conductors or insulators, and recording the results in a table. glass and ceramic insulators on power lines Design systems that use circuits to solve problems for people, whether it is the wiring in a house, an alarm bell, a lighthouse on the coast, or 		<ul style="list-style-type: none"> Designing, making, evaluating and presenting a system that uses a circuit to produce movement, light, sound or heat* in a structure such as a steady hand game, house, light house or a toy. The circuit should include components such as cell/s, light bulb/s, buzzer/s, and switch/es 			<ul style="list-style-type: none"> Explain steps which outline the process to make electricity from coal: Use diagrams to trace and explain the electrical energy in a sequence from an appliance, such as from your TV set, to the coal-fired power station and back to the original source, the Sun Examine labels (in adverts, or real electrical appliances) to find out how much power they require in a certain time (e.g.; kettles, a radio, a TV, an iron, a hot plate, charging a cell phone, etc.) and make comparisons. Explain different ways to save electricity, from small actions, to larger actions Describe and illustrate using diagrams safety rules when working with electricity 		

		constructing toys, which use electrical energy to work.		<ul style="list-style-type: none"> Researching and writing about renewable ways to generate electricity including in wind power generators, solar panels (photovoltaics), hydro-electric power generators, biomass, and geothermal
SBA (Formal Assessment)	<ul style="list-style-type: none"> Practical Task/ Investigation Test 			

Planet Earth and Beyond

Term 4 47 days	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
CAPS Topic	The Solar System (2½ weeks)		Movements of the Earth and planets (1 week)	The movement of the Moon (1 week)	Systems for looking into space (1 week)	Systems to explore the Moon and Mars (2½ weeks)		
Core Concepts, Skills and Values	<ul style="list-style-type: none"> The Sun, Planets and Asteroids Moons 		<ul style="list-style-type: none"> Rotation (Earth) Revolution (Earth) 	<ul style="list-style-type: none"> Rotation (Moon) Revolution (Moon) 	<ul style="list-style-type: none"> Telescopes 	<ul style="list-style-type: none"> Vehicles used on the Moon Vehicles used on Mars 		
Requisite Pre-Knowledge	<ul style="list-style-type: none"> Grade 5: Planet Earth & Beyond The Earth moves. Surface of the Earth. Sedimentary rocks. 		<ul style="list-style-type: none"> Researching/reading information about the planets focusing on size, distance from the Sun, average temperature, number of moons and any other features making models of the Solar Systems. Considering position in relation to the Sun, size and features of the planets. Describing and drawing the objects in our Solar System 	<ul style="list-style-type: none"> Demonstrating the movements (rotation and revolution) of the Earth using models and body movements demonstrating how day and night occur using a model of the Earth and a light source (for the Sun) Drawing and writing about the rotation of the Earth in relation to the Sun - how day and night occur 				
Resources (other than textbook) to enhance learning	<ul style="list-style-type: none"> Models and a light source such as torch, lamp, or candle to demonstrate the movements of the Earth 		<ul style="list-style-type: none"> Models and light source such as torch, lamp or candle to demonstrate the movements of the Earth. 	<ul style="list-style-type: none"> Models and a light source such as torch, lamp, or candle to demonstrate the movements of the Moon 	<ul style="list-style-type: none"> Pictures and information about telescope 			
Informal Assessment	<ul style="list-style-type: none"> Practical tasks. Demonstrations. Class works. Homework. 		<ul style="list-style-type: none"> Research Investigate Class works Homework 	<ul style="list-style-type: none"> Research Investigate Class works Homework 	<ul style="list-style-type: none"> Research Demonstrating how day and night occur. Drawing models Class works 	<ul style="list-style-type: none"> Practical tasks. Demonstrations. Class works. Homework 		
SBA (Formal Assessment)	<ul style="list-style-type: none"> Test 							

Major Process and Design Skills

The teaching and learning of Natural Sciences and Technology involves the development of a range of process and design skills that may be used in everyday life, in the community and in the workplace. Learners also develop the ability to think objectively and use a variety of forms of reasoning while they use these skills. Learners can gain these skills in an environment that taps into their curiosity about the world, and that supports creativity, responsibility and growing confidence.

The following are the cognitive and practical process and design skills that learners will be able to develop in Natural Sciences and Technology

1. *Accessing and recalling information* – being able to use a variety of sources to acquire information, and to remember relevant facts and key ideas, and to build a conceptual framework
2. *Observing* – noting in detail objects, organisms and events
3. *Comparing* – noting similarities and differences between things
4. *Measuring* – using measuring instruments such as rulers, thermometers, clocks and syringes (for volume)
5. *Sorting and classifying* – applying criteria in order to sort items into a table, mind-map, key, list or other format
6. *Identifying problems and issues* – being able to articulate the needs and wants of people in society STATEMENT (CAPS)
7. *Raising questions* – being able to think of, and articulate relevant questions about problems, issues, and natural phenomena
8. *Predicting* – stating, before an investigation, what you think the results will be for that particular investigation
9. *Hypothesizing* – putting forward a suggestion or possible explanation to account for certain facts. A hypothesis is used as a basis for further investigation which will prove or disprove the hypothesis
10. *Planning investigations* – thinking through the method for an activity or investigation in advance. Identifying the need to make an investigation a fair test by keeping some things (variables) the same whilst other things will vary
11. *Doing investigations* – this involves carrying out methods using appropriate apparatus and equipment, and collecting data by observing and comparing, measuring and estimating, sequencing, or sorting and classifying. Sometimes an investigation has to be repeated to verify the results.
12. *Recording information* – recording data from an investigation in a systematic way, including drawings, descriptions, tables and graphs
13. *Interpreting information* – explaining what the results of an activity or investigation mean (this includes reading skills)
14. *Designing* – showing (e.g. by drawing) how something is to be made taking into account the design brief, specifications and constraints
15. *Making/constructing* – building or assembling an object using appropriate materials and tools and using skills such as measuring, cutting, folding, rolling, gluing
16. *Evaluating and Improving products* – using criteria to assess a constructed object and then stating or carrying out ways to refine that object
17. *Communicating* – using written, oral, visual, graphic and other forms of communication to make information available to other people