

## 2023/24 ANNUAL TEACHING PLANS: NATURAL SCIENCES AND TECHNOLOGY: GRADE 6 (TERM 1)

TERM 1	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10	WEEK 11
<b>CAPS TOPICS</b>	<b>Life and living</b>										
<b>CORE CONCEPTS, SKILLS AND VALUES</b>	Photosynthesis		Nutrients in food		Nutrition		Food webs			Remediation, revision and consolidation	
<b>REQUISITE PRE-KNOWLEDGE</b>	<ul style="list-style-type: none"> <li>Plants and food</li> <li>Plants and air</li> </ul>		Food groups		Balanced diets		<ul style="list-style-type: none"> <li>Different ecosystems</li> <li>Living and non-living things in ecosystems.</li> </ul>				
<b>RESOURCES TO ENHANCE LEARNING</b>	<ul style="list-style-type: none"> <li>Grade 4: Life processes; Energy and energy transfer</li> <li>Grade 5: Food chains; Life cycles</li> </ul>		Examples of different foods representing the different food groups and food packaging		<ul style="list-style-type: none"> <li>Lists of different diets</li> <li>Pictures and information about food-related illnesses</li> </ul>		Pictures of ecosystems such as rivers, mountains, the sea, rocky shores, ponds, wetlands, grasslands, forests and deserts				
<b>INFORMAL ASSESSMENT</b>	<ul style="list-style-type: none"> <li>Glucose powder, maize flour, iodine solution and plastic droppers</li> <li>Examples of foods, such as cooked rice, flour, potato, bread, oil, boiled egg and cheese</li> <li>Video clips from the internet</li> </ul>										
<b>SBA (FORMAL ASSESSMENT)</b>	<ul style="list-style-type: none"> <li>Explain and illustrate how plants make food</li> <li>Compare glucose sugar (such as glucose sweets) and starch (such as maize flour) according to their taste and colour</li> <li>Test various foods for the presence of starch with iodine solution (e.g. cooked rice, flour, potato, bread, oil, boiled egg, cheese, etc.)</li> </ul>										
	<ul style="list-style-type: none"> <li>Classifying food into the different food groups, namely carbohydrates, proteins, fats and oils and vitamins and minerals</li> <li>State reasons why each food group is important in our diet</li> <li>Read labels on food packaging to look for the nutrients and/or the additives in the food</li> <li>Explain whether each of the additives make these products more or less healthy to eat</li> <li>Carefully study various diets to evaluate if they contain all the food groups/whether they are a balanced diet</li> <li>Explain why different portions of the different food groups are necessary for a balanced diet</li> <li>Discuss various diseases caused by an unhealthy diet, such as tooth decay, obesity, diabetes or deficiency diseases</li> </ul>										
	<ul style="list-style-type: none"> <li>Describe different types of ecosystems on our planet</li> <li>Identify an ecosystem, describe it and draw the feeding relationships (food webs) within it</li> <li>Investigate an ecosystem in or near the school grounds. Mark out the area with sticks and string using the quadrant method, ensuring that you do not damage any of the plants or animals</li> <li>Study both the living and non-living things within the ecosystem</li> <li>Identify the possible threats to this ecosystem and possible ways to overcome them</li> </ul>										
	<ul style="list-style-type: none"> <li>Practical task/investigation</li> <li>Test</li> </ul>										

## 2023/24 ANNUAL TEACHING PLANS: NATURAL SCIENCES AND TECHNOLOGY: GRADE 6 (TERM 2)

TERM 2	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10 AND 11
<b>CAPS TOPICS</b>	<b>Matter and materials</b>									
	<b>Solids, Liquids and gases</b>	<b>Mixtures</b>	<b>Solutions as special mixtures</b>	<b>Dissolving</b>	<b>Mixtures and water resources</b>	<b>Processes to purify water</b>	Remediation, revision and consolidation			
<b>CORE CONCEPTS, SKILLS AND VALUES</b>	Arrangement of particles	<ul style="list-style-type: none"> <li>Mixtures of materials</li> <li>Solutions</li> </ul>	<ul style="list-style-type: none"> <li>Soluble substances</li> <li>Saturated solutions</li> <li>Insoluble substances</li> </ul>	Rates of dissolving	<ul style="list-style-type: none"> <li>Water pollution</li> <li>Importance of wetlands</li> </ul>	Clean water				
<b>REQUISITE PRE-KNOWLEDGE</b>	<ul style="list-style-type: none"> <li>Grade 4: Materials around us; Solid materials</li> <li>Grade 5: Processing materials; Processed materials</li> </ul>									
<b>RESOURCES TO ENHANCE LEARNING</b>	<ul style="list-style-type: none"> <li>Materials: Science diary or workbook and pencils</li> <li>video clips from the internet</li> </ul>	<ul style="list-style-type: none"> <li>Materials: Science diary or workbook and pencils</li> <li>Video clips from the internet</li> <li>Examples of materials and substances, such as sand or coins</li> <li>Plastic spoons for scooping, a small glass or transparent plastic cup for mixing, sieve (the type used for sieving flour), a kitchen towel or paper towel, copper sulphate crystals and matches</li> <li>Foodstuff: Salt, sugar, tea leaves, peanuts, dried beans, sweets, curry powder, grated cheese, milk, water, cooking oil and food colouring</li> <li>Laboratory equipment: Beakers, funnels, filter papers, evaporating dishes, tripod stands and a stove or Bunsen burner</li> </ul>	<ul style="list-style-type: none"> <li>Laboratory equipment: Glass beakers/small yoghurt tubs/clear containers, a stopwatch or clock with a second hand, thermometers and plastic spoons</li> <li>Materials: Science diary or workbook and pencils</li> <li>Video clips from the internet</li> <li>Fine table salt, coarse rock salt, very hot water (not boiling), tap water (at room temperature) and ice water</li> </ul>	<ul style="list-style-type: none"> <li>Laboratory equipment: Sieves, filter paper, funnels and beakers</li> <li>Materials: Science diary or workbook and pencils,</li> <li>Video clips from the internet</li> <li>Containers, a kettle, water, purification tablets (if possible and pictures of different kinds of polluted water</li> <li>Sources about, and pictures of, different wetlands</li> </ul>	Sieves, filter paper, funnels, containers, a kettle and water purification tablets (if possible)					
<b>INFORMAL ASSESSMENT</b>	<ul style="list-style-type: none"> <li>Draw and explain how particles are arranged in a solid, liquid and gas</li> <li>Identify the three states of matter in everyday life</li> <li>Describe solids, liquids and gases in terms of the arrangement of their particles</li> </ul>	<ul style="list-style-type: none"> <li>Explain and demonstrate the different ways in which solids, liquids and gases can be combined to form mixtures</li> <li>Explain and demonstrate the different ways in which mixtures can be separated, such as sieving and hand sorting</li> <li>Investigate different solids to see whether they dissolve in water, including salt and sugar (soluble substances) as well as sand, mealie meal, flour, maize flour, samp, curry powder and custard powder (insoluble substances)</li> <li>Investigate solutions to see whether we can recover the solute by filtering or settling followed by decanting, or evaporating the water (crystallisation)</li> <li>Investigate and make sugar crystals</li> <li>Explain different kinds of mixtures (including solutions)</li> <li>Distinguish between soluble and insoluble substances</li> <li>Recover the solute from the solvent and draw and write about the process</li> </ul>	<ul style="list-style-type: none"> <li>Investigate the difference between melting and dissolving</li> <li>Investigate, measure and draw graphs of the time taken to dissolve a solute in hot or cold water when stirring/shaking or not, and while stirring/shaking using coarse or fine salt</li> <li>Tell what factors affect the rate of dissolving</li> </ul>	<ul style="list-style-type: none"> <li>Discuss pollution and where it comes from.</li> <li>Identify three main categories of pollutants found in water and explain how you think they entered/ended up in the water.</li> <li>Explain why wetlands are so important</li> <li>Research the different wetlands in South Africa</li> </ul>	<ul style="list-style-type: none"> <li>Design, make and evaluate a system to process and purify dirty water</li> <li>Investigate how to best purify dirty water in class and/or at home</li> </ul>					
<b>SBA (FORMAL ASSESSMENT)</b>	<ul style="list-style-type: none"> <li>Practical task/investigation</li> <li>Test</li> </ul>									

## 2023/24 ANNUAL TEACHING PLANS: NATURAL SCIENCES AND TECHNOLOGY: GRADE 6 (TERM 3)

TERM 3	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10 AND 11	
<b>CAPS TOPICS</b>	<b>Energy and change and systems and control</b>										
	<b>Electric circuits</b>			<b>Electrical conductors and insulators</b>		<b>Systems to solve problems</b>		<b>Mains electricity</b>		Remediation, revision and consolidation	
<b>CORE CONCEPTS, SKILLS AND VALUES</b>	<ul style="list-style-type: none"> <li>• A simple circuit</li> <li>• Circuit diagrams</li> </ul>			<ul style="list-style-type: none"> <li>• Conductors</li> <li>• Insulators</li> </ul>		Using electric circuits		<ul style="list-style-type: none"> <li>• Fossil fuels and electricity</li> <li>• Cost of electricity</li> <li>• Renewable ways to generate electricity</li> </ul>			
<b>REQUISITE PRE-KNOWLEDGE</b>	Grade 5: Energy and electricity					Grade 5: Stored energy in fuels; Energy; Electricity; Fossils (Planet Earth and beyond)					
<b>RESOURCES ENHANCE LEARNING</b>	<ul style="list-style-type: none"> <li>• Laboratory equipment: Cells/batteries, conducting wires, light bulbs and switches</li> <li>• Supplementary material: Video clips, YouTube videos, PhET simulations and pictures</li> </ul>			<ul style="list-style-type: none"> <li>• Laboratory equipment: Cells/batteries, conducting wires, light bulbs and switches</li> <li>• 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</li> <li>• Supplementary material: Video clips, YouTube videos and PhET simulations</li> </ul>		<ul style="list-style-type: none"> <li>• Laboratory equipment: Basic components for a circuit, including components such as cells, light bulbs, conducting wires, buzzers and switches.</li> <li>• Supplementary material: Video clips, YouTube videos and PhET simulations</li> </ul>		<ul style="list-style-type: none"> <li>• Different materials</li> <li>• Pictures and video clips of fuels and their various uses</li> <li>• Pictures to show how electricity is generated in a coal-fired power station</li> <li>• Examples of electrical appliances</li> <li>• Pictures of renewable ways to generate electricity, including examples of wind power generators, solar power generators and hydro-electric power generators</li> <li>• Using diagrams, explain and illustrate how fossil fuels such as coal were formed</li> </ul>			
<b>INFORMAL ASSESSMENT</b>	<ul style="list-style-type: none"> <li>• Investigate different ways of making a simple circuit</li> <li>• Investigate how a switch works</li> <li>• Design and make a switch to control the circuit</li> <li>• Investigate bulbs by comparing torch light bulbs with a light bulb that is used in a light fitting in a house or in your classroom</li> <li>• Identify the six parts of a light bulb</li> <li>• Draw a circuit diagram using various components:               <ul style="list-style-type: none"> <li>○ 1 × cell and 2 × bulbs</li> <li>○ 2 × cells and 2 × bulbs</li> <li>○ 3 × cells and 3 × bulbs.</li> <li>○ 3 × cells, 1 × bulb and an open switch</li> <li>○ 1 × cell, 2 × bulbs and a closed switch (the switch must be between the bulbs), etc.</li> </ul> </li> </ul>			<ul style="list-style-type: none"> <li>• Investigate what conductors and insulators are</li> <li>• Test different materials (such as metal paper clips, nails, wire, steel wool, coins, plastic, glass, ceramic, cardboard, paper, wood, rubber and chalk) in an electric circuit to see if they are conductors or insulators and record the results in a table</li> <li>• Glass and ceramic insulators on power lines</li> <li>• Design systems that use circuits to solve problems for people, whether it be the wiring in a house, an alarm bell, a lighthouse on the coast or constructing toys that use electrical energy to work.</li> </ul>		<ul style="list-style-type: none"> <li>• Design, make, evaluate and present a system that uses a circuit to produce movement, light, sound or heat in a structure such as:               <ul style="list-style-type: none"> <li>○ A steady hand game, house, light house or a toy</li> <li>○ The circuit should include components such as cells, light bulbs, buzzers and switches.</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• Explain the steps that outline the process to make electricity from coal</li> <li>• Use diagrams to trace and explain the flow of 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, namely the Sun.</li> <li>• Examine labels (in adverts or on real electrical appliances) to find out how much power they require in a certain time (e.g. a kettle, a radio, a TV, an iron, a hot plate, charging a cell phone, etc. (most kettles require more than 2 000 W, while a radio requires just more than 15 W) and make comparisons</li> <li>• Explain different ways to save electricity, from small actions to larger actions</li> <li>• Using diagrams, describe and illustrate safety rules when working with electricity</li> <li>• Research and write about renewable ways to generate electricity, including in wind power generators, solar panels (photovoltaics), hydro-electric power generators, biomass and geothermal energy.</li> </ul>			
<b>SBA (FORMAL ASSESSMENT)</b>	<ul style="list-style-type: none"> <li>• Practical task/investigation</li> <li>• Test</li> </ul>										

2023/24 ANNUAL TEACHING PLANS: NATURAL SCIENCES AND TECHNOLOGY: GRADE 6 (TERM 4)

TERM 4	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	
<b>CAPS TOPICS</b>	<b>Planet Earth and beyond</b>									
	<b>The Solar System</b>		<b>Movements of the Earth and planets</b>	<b>The movement of the Moon</b>	<b>Systems for looking into space</b>	<b>Systems to explore the Moon and Mars</b>			Remediation, revision, and consolidation	
<b>CORE CONCEPTS, SKILLS AND VALUES</b>	<ul style="list-style-type: none"> <li>The Sun, planets and asteroids</li> <li>Moons</li> </ul>		<ul style="list-style-type: none"> <li>Rotation (Earth)</li> <li>Revolution (Earth)</li> </ul>	<ul style="list-style-type: none"> <li>Rotation (Moon)</li> <li>Revolution (Moon)</li> </ul>	<ul style="list-style-type: none"> <li>Telescopes</li> </ul>	<ul style="list-style-type: none"> <li>Vehicles used on the Moon</li> <li>Vehicles used on Mars</li> </ul>				
<b>REQUISITE PRE-KNOWLEDGE</b>	<ul style="list-style-type: none"> <li>Grade 5: Planet Earth and beyond</li> <li>The Earth moves</li> <li>The surface of the Earth</li> <li>Sedimentary rock</li> </ul>		<ul style="list-style-type: none"> <li>Research/read information about the planets, focusing on size, distance from the Sun, average temperature, number of moons and any other features</li> <li>Making models of the Solar System</li> <li>Consider the position in relation to the Sun and the size and features of the planets</li> <li>Describe and draw the objects in our Solar System</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate the movements (rotation and revolution) of the Earth that demonstrates how day and night occur using a model of the Earth, a light source for the Sun and body movements</li> <li>Draw and write about the rotation of the Earth in relation to the Sun: How day and night occur</li> </ul>						
<b>RESOURCES TO ENHANCE LEARNING</b>	Models and a light source such as torch, lamp or candle to demonstrate the movements of the Earth		Models and a light source such as torch, lamp or candle to demonstrate the movements of the Earth		Models and a light source such as torch, lamp or candle to demonstrate the movements of the Moon		Pictures and information about telescopes			
<b>INFORMAL ASSESSMENT</b>	<ul style="list-style-type: none"> <li>Describe the position of the Earth in relation to the Sun and in relation to the size and features of the other planets</li> <li>Describe and draw the objects in our Solar System</li> <li>Describe the main features of the Sun and Moon</li> <li>Explain how the Earth moves around the Sun</li> <li>Recognise that the phases of the Moon are a result of the changing pattern of sunlight that we can see on the Moon</li> <li>Demonstrate the Earth's movement in its orbit around the Sun</li> <li>Describe the Earth's movement on its own axis</li> <li>Identify the different telescopes and how they work</li> <li>Describe the vehicles used to explore the Moon and Mars</li> </ul>									
<b>SBA (FORMAL ASSESSMENT)</b>	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.

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| <ol style="list-style-type: none"> <li>1. <i>Accessing and recalling information</i> – 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</li> <li>2. <i>Observing</i> – noting objects, organisms and events in detail</li> <li>3. <i>Comparing</i> – noting similarities and differences between things</li> <li>4. <i>Measuring</i> – using measuring instruments such as rulers, thermometers, clocks and syringes (for volume)</li> <li>5. <i>Sorting and classifying</i> – applying criteria in order to sort items into a table, mind-map, key, list or other format</li> <li>6. <i>Identifying problems and issues</i> – being able to articulate the needs and wants of people in society</li> <li>7. <i>Raising questions</i> – being able to think of and articulate relevant questions about problems, issues and natural phenomena</li> <li>8. <i>Predicting</i> – stating, before an investigation, what the learner thinks the results will be for that particular investigation</li> <li>9. <i>Hypothesising</i> – putting forward a suggestion or possible explanation to account for certain facts. A hypothesis is used as a basis for further investigation that will prove or disprove the hypothesis</li> <li>10. <i>Planning investigations</i> – 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, while other things will vary</li> </ol> | <ol style="list-style-type: none"> <li>11. <i>Doing investigations</i> – 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</li> <li>12. <i>Recording information</i> – recording data from an investigation in a systematic way, which includes drawings, descriptions, tables and graphs</li> <li>13. <i>Interpreting information</i> – explaining what the results of an activity or investigation mean (this includes reading skills)</li> <li>14. <i>Designing</i> – showing (e.g. by drawing) how something is to be made, taking into account the design brief, specifications and constraints</li> <li>15. <i>Making/constructing</i> – building or assembling an object using appropriate materials and tools and using skills such as measuring, cutting, folding, rolling and gluing</li> <li>16. <i>Evaluating and improving products</i> – using criteria to assess a constructed object and then stating or carrying out ways to refine that object</li> <li>17. <i>Communicating</i> – using written, oral, visual, graphic and other forms of communication to make information available to other people</li> </ol> |
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