

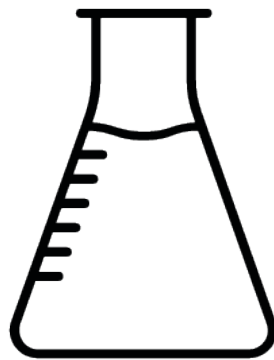


basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA



Planner & Tracker for Recovery ATP

Natural Sciences & Technology



Grade 4 Term 3

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Introduction

Dear Natural Sciences & Technology Teachers,

The COVID-19 Pandemic has left us with an enormous challenge in education. As we return to 'normal schooling', we all have to work smarter and harder to ensure that our system recovers.

This document is designed to help you achieve this. By systematically working through this plan, we are confident that you can address the loss of teaching and learning time, and bring your learners to the level where they need to be in terms of NS & Tech.

We thank you in advance for the commitment, dedication and hard work that is required of you.

You are truly building our nation.

With very best wishes for the term ahead,

The DBE / NECT Recovery ATP Trackers Team

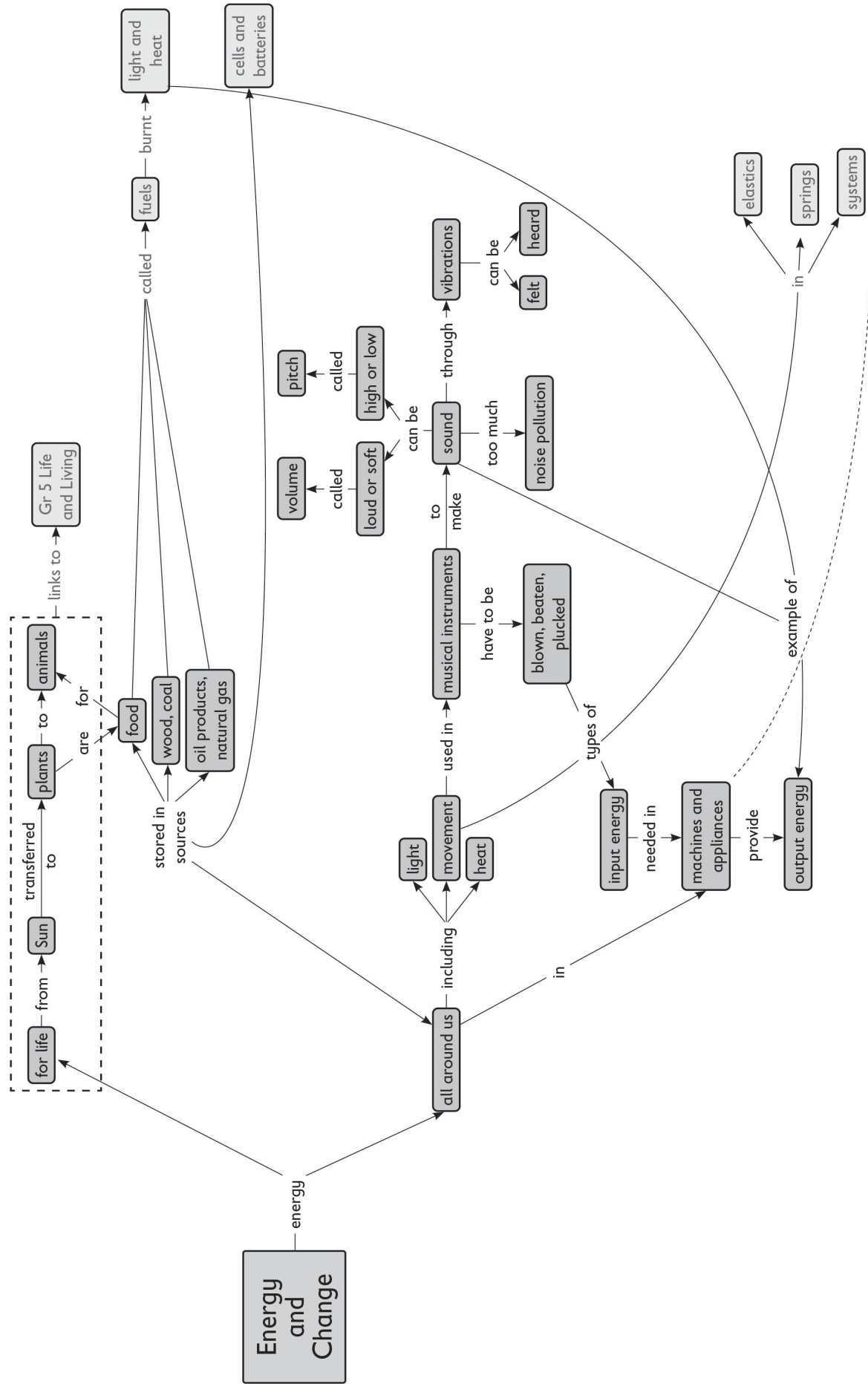
Overview

Please continue to keep the following key principles in mind throughout the recovery journey:

- The development of **Science Process Skills** is key to the teaching and learning of the subject. Focussing on these skills is critical.
- Learners should be given as many opportunities as possible to **write regularly and read for meaning** in Natural Science and Technology, in order to develop **language skills** as well. Due to learning losses, as a result of the Covid pandemic, it is the responsibility of every educator to develop these literacy skills.
- It is very important to give learners a sense of **how science applies to their daily lives**, and of **the value that science adds to their lives**. Hold a brief discussion on this point when introducing a new topic, and invite learners to contribute their ideas on the uses and value that this topic has.
- At the end of every topic, come back to the topic overview, and **reflect on what has been learnt and taught**. In particular, it is important to note your challenges and ideas for future improvement, so that you can improve your teaching the next year.
- At the core of all scientific activities is the need to **ask questions**. These questions help us seek answers through observation and experimental design. The results of these questions should raise more questions. It is this natural curiosity that all teachers, and especially science teachers, should be encouraging in their classrooms. **Encourage curiosity and questions that investigate, inquire and probe.**
- **Build a solid conceptual foundation** for learners. A **conceptual chain** for the phase is provided at the start of this document. It is important for all NS & Tech teachers to work cohesively to ensure that learners are equipped with a solid understanding of the required concepts, by the time they leave the phase.
- Using the **CONCEPTUAL CHAIN** provided, **work together** as a department to:
 - a. Check that all **concepts for the phase are covered** in your school's recovery plan.
 - b. **Check for overlaps** across the grades.
 - c. **Identify the weak links in the conceptual chain** - points where learners struggle and may be the source of misconceptions or common errors.
 - d. Decide how to **emphasise critical concepts from previous grades**, especially where topics have moved from a different grade in the revised ATP.

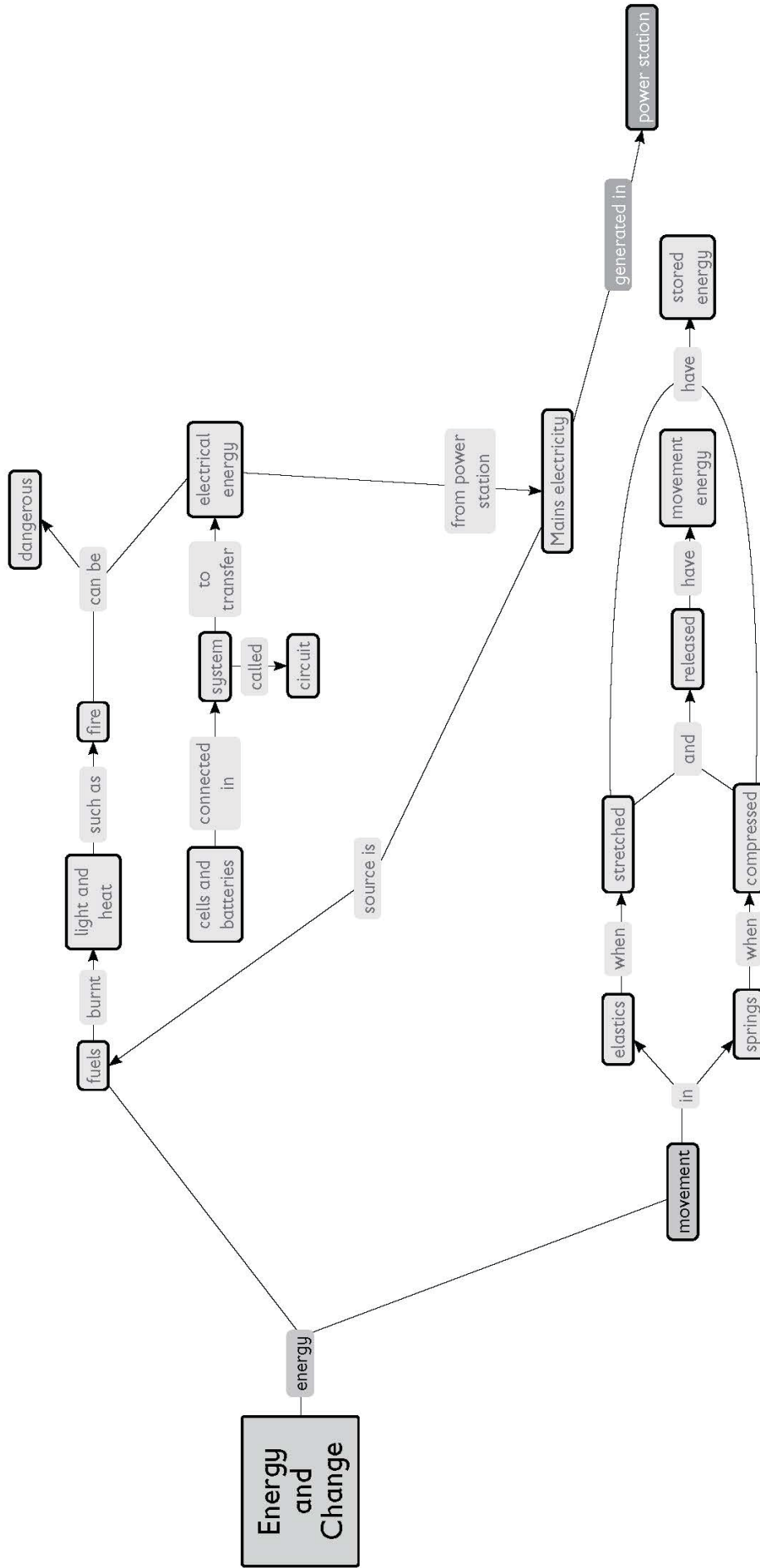
Energy and Change Concept Map

Grade 4



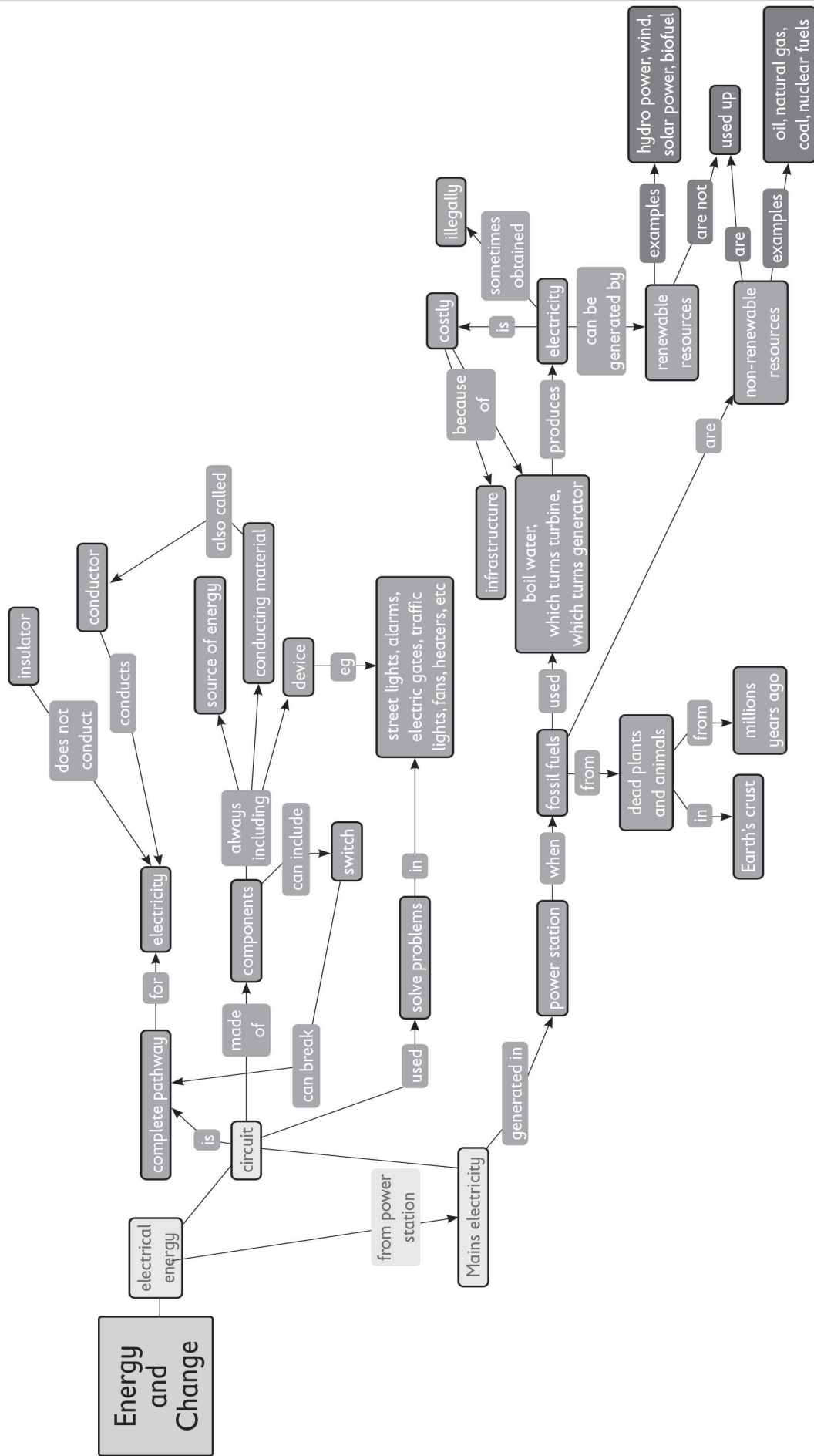
The concept maps in this section have been adapted from *Thunderbolt Kids resources* published by *Siyavula*.

Energy and Change Concept Map
Grade 5



The concept maps in this section have been adapted from *Thunderbolt Kids resources* published by *Siyavula*.

Energy and Change Concept Map
Grade 6



The concept maps in this section have been adapted from *Thunderbolt Kids resources* published by *Siyavula*.

Amendments to the Annual Teaching Plan

The Recovery ATP for Natural Sciences & Technology has the **same content as in CAPS**.

It is important to note that all the topics for Grade 4 Term 3, NS and Tech have been **brought back as per CAPS (Grade 4)**. Therefore, there is no change to the topics and time allocation.

- **All topics remain the same:**

1. Energy and Energy transfer (2 weeks)
2. Energy around us (3 weeks)
3. Movement & Energy in a system (2 weeks)
4. Energy and Sound (2 weeks)

Directions on how to cover all required topics are provided in the Tracker that follows.

Amendments To The Programme Of Assessment

- The Programme of Assessment is aligned to the Revised Section 4 of CAPS.
- Both formal and informal assessment should continue as normal.
- Recording of the informal assessment is left to the discretion of the teacher.
- The 2021 formal assessment tasks for Grade 4 are as follows:

	TERM 1	TERM 2	TERM 3	TERM 4
Practical Task/Investigation	20 marks	20 marks	20 marks	-
Test	20 marks	40 marks	20 marks	40 marks

Sample Assessment Tasks and Memoranda / Rubrics for Grade 4 Term 3 are included in this document.

Notes:

- **Column 1** shows the **time allocation** per topic.
- **Column 2** shows the **Recovery ATP requirements** for Grade 4 Term 3.
- **Column 3** shows **where in the NECT lesson plans** this is covered.
- **Column 4** shows **where in the approved textbooks** this is covered.
- Finally, if, for any reason, the **Term 3 teaching time** for NS & Tech **is reduced**, please ensure that the **KEY CONCEPTS** listed under 'Scaling Down' are thoroughly covered.

Key To Approved Textbook Abbreviations:

SFA	Solutions for All Natural Sciences and Technology Grade 4 MacMillan
S&M	Study & Master Natural Sciences and Technology Grade 4. Cambridge University Press
DbD	Day by Day Natural Sciences and Technology Grade 4 Maskew Miller Longman
PLAT	Platinum Natural Sciences and Technology Grade 4 Maskew Miller Longman
VIVA	Viva Natural Sciences and Technology Grade 4 Vivlia
SO	Spot On Natural Sciences and Technology Grade 4 Pearson
OS	Oxford Successful Natural Sciences and Technology Grade 4 Oxford University Press
TC	Top Class Natural Sciences and Technology Grade 4 Shuter and Shooter
SIBB	Sasol Inzalo Book B Natural Sciences and Technology Grade 4 Sasol

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Weeks 1 and 2 6 hours	Energy and Energy Transfer 1. Energy for Life 2. Energy from the Sun	Grade 4 Term 3 Lesson Plans Lesson 1A: Energy for Life Lesson 1B: Energy from Food Lesson 1C: Energy in food comes from the Sun Lesson 2A: Energy from the Sun Lesson 2B: Food Chains	SFA Gr 4 133 -135 S&M Gr 4 95 – 101 DbD Gr 4 93 – 100 PLAT Gr 4 110 - 115 VIVA Gr 4 98 – 100 SO Gr 4 56 - 59 OS Gr 4 76 - 83 SIBB Gr 4 4 – 15 TC Gr 4 77 - 90	

Scaling down

If the Term 3 teaching time is reduced, ensure that learners have a thorough understanding of the following key content and concepts:

- Energy for Life
- Every living thing on Earth needs energy
- Energy in our food comes from the Sun
- Plants use the energy from the Sun to make food for themselves and for animals and people
- Energy is transferred from the Sun to plants, and to animals in a sequence known as an energy or food chain
- So all energy comes from the Sun

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Weeks 3, 4 and 5 9 hours	Energy around us 1. Energy 2. Input & Output Energy	<u>Grade 4 Term 3 Lesson Plans</u> Lesson 2C: Energy around us Lesson 3A: Types of Energy Lesson 3B: Sources of stored energy Lesson 3C: Energy can be transferred Lesson 4A: Drawing a flow diagram Lesson 4B: Input and output energy Lesson 4C: Using machines Lesson 5A: Working machines	SFA Gr 4 140 – 150 S&M Gr 4 102 – 109 DbD Gr 4 103 – 110 PLAT Gr 4 118 – 125 VIVA Gr 4 102 – 106 SO Gr 4 60 - 65 OS Gr 4 83 – 90 SIBB Gr 4 18 – 34 TC Gr 4 83 - 92	

If the Term 3 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

- Energy is all around us - light, heat, sound & movement
- Energy is stored in sources such as food, wood, coal, oil products, and natural gas
- Energy can be transferred from a source to where it is needed
- Input and output energy – machines and appliances, like musical instruments, need input energy - bang a drum, to provide output energy – sound of the drum

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Weeks 6, 7 and part of Week 8. 7.5 hours	Movement & Energy in a system 1. Movement & musical Instruments 2. Examples of musical instruments 3. Materials to make musical instruments	<u>Grade 4 Term 3 Lesson Plans</u> Lesson 5B: Movement & musical instruments Lesson 5C: Types of instruments Lesson 6A: Instrument parts that move or vibrate Lesson 6B: Indigenous African musical instruments Lesson 6C: Designing a musical instrument Lesson 7A: Making a musical instrument Lesson 7B: Evaluating a musical instrument	SFA Gr 4 S&M Gr 4 DbD Gr 4 PLAT Gr 4 VIVA Gr 4 SO Gr 4 OS Gr 4 SIBB Gr 4 TC Gr 4	154 – 166 110 – 118 113 – 119 128 – 135 107 – 116 66 – 73 91 – 95 35 – 47 93 - 99

if the Term 3 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

- Musical instruments systems use movement input energy (such as blowing, beating and plucking) to make them work
- Many instruments have parts that can move or vibrate
- Musical instruments produce sound as the main output energy

TIME ALLOCATION	DBE RECOVERY ATP REQUIREMENTS	NECT LESSON PLANS: LESSONS	APPROVED TEXTBOOKS	DATE COMPLETED
Weeks 8 to 10 8 hours	Energy & Sound 1. Vibrations & sound 2. Making sounds 3. Noise pollution	<p><u>Grade 4 Term 3 Lesson Plans</u></p> <p>Lesson 7C: Hearing sounds</p> <p>Lesson 8A: Hearing & feeling vibrations</p> <p>Lesson 8B: Sound vibrations travel through different materials</p> <p>Lesson 8C: Making sounds - volume</p> <p>Lesson 9A: Making sounds - pitch</p> <p>Lesson 9B: Noise pollution</p> <p>Lesson 9C: Case Study</p>	<p>SFA Gr 4 175 – 189</p> <p>S&M Gr 4 120 – 129</p> <p>DbD Gr 4 123 – 133</p> <p>PLAT Gr 4 138 – 149</p> <p>VIVA Gr 4 117 – 123</p> <p>SO Gr 4 74 – 81</p> <p>OS Gr 4 96 – 106</p> <p>SIBB Gr 4 50 – 72</p> <p>TC Gr 4 101 - 111</p>	

If the Term 3 teaching time is reduced, ensure that learners have a thorough understanding of the following key concepts:

- Hearing sounds – how sounds travel via vibrations
- Vibrations – hearing, feeling, travelling through materials
- Volume and pitch of sound
- Noise pollution and how it damages it our hearing

Below is a set of sample assessment tasks and memoranda. Please feel free to use these tasks as is, or to adapt for your context. It is important to ensure that learners are only assessed on work that has been taught.

Natural Sciences & Technology **Grade 4** **Practical Task** **Term 3**

Time: 40 minutes
(20 minutes preparation, 20 minutes task time)
Marks: 20

NOTES TO THE TEACHER

1. This practical activity will be completed as part of Section E of lesson 8A.
2. This practical will take place during the lesson after the teaching component in Section D, "Accessing Information".
3. The first 20 minutes will be used to teach section D and prepare learners for the practical task.
4. The second 20 minutes will be used to complete the practical activity as outlined in Section E.
5. The instructions and content of the practical task should be written on the chalkboard for the learners.
6. The memo for assessing the practical task is provided.
7. The learners will be working in groups and will need the following items for each group to complete the tasks:
 - A metal spoon, fork or knife
 - 3 glass jars of the same size
 - A container of water
 - A coke bottle or similar
 - A coke can or similar
 - A ruler
8. Another option is to set up one of each experiment and have the learners move in groups from one to another. This will take some organisation on the part of the educator.
9. Ensure that all the materials have been collected before the practical lesson. This may take a few days. Allow enough time for this.
10. The learners should complete their drawings with a sharp pencil and the written answers should be completed in pen.

11. Tell the learners that they are going to be doing an investigation where they will be exploring vibration and sound.
12. Divide the learners into groups so that they all have access to the materials.
13. Write the following onto the chalkboard (always try to do this before the lesson starts):

PRACTICAL TASK

1. This practical task will be done in the groups that I have divided you into.
2. Each group will be doing tasks to explore vibration and sound.
3. Each person in the group must participate in the investigation and complete the answers to the written activities in their workbooks.
4. Each group will need the following materials and equipment to do the investigation:
 - A metal spoon, fork or knife
 - 3 glass jars of the same size
 - A container of water
 - A coke bottle or similar
 - A coke can or similar
 - A ruler

14. Read through the practical task with the learners.
15. Remind the learners that in the previous lesson they had learnt about how the ear uses vibrations to hear sound.
16. Tell the learners that today they are going to be investigating some of the properties of vibration.
17. Have each group collect the equipment they will need for the task.
18. Copy the information below onto the chalkboard.

PRACTICAL TASK / INVESTIGATION: 20 MARKS

TASK 1: (4 MARKS)

- Hold a ruler over the edge of the desk so that 20 cm of the ruler is hanging over the edge and the other end it is being held down firmly by another hand on the desk.
- Bend the long edge down towards the floor. DO NOT BREAK IT. Let go. Observe the movement or vibrations.
- Now do the same but have only 5cm of the ruler hanging over the edge of the desk.
- Pull the hanging piece down in the same way and let go.
- Observe the movement, vibrations and sounds.

Answer the following questions:

- 1a. Which length of ruler vibrated the most?*
- 1b. Did you feel any vibrations in the hand that held down the ruler on the desk?*
- 1c. What conclusion can you make about vibrations from this task?*

19. Read through task 1 with the learners.
20. Ask them if they have any questions.
21. Tell the learners they have 5 minutes to complete task 1.
22. Supervise the learners whilst they complete the task. Answer any questions they have.
23. After 5 minutes call the learners back to attention.
24. Tell the learners that they are now going to complete task 2.
25. Copy the information below onto the chalkboard.

TASK 2: (6 MARKS)

- Tap the top of the desk softly with a metal spoon. Listen to the sound.
- Now tap the top of the desk harder with the metal spoon. Listen to the sound.

Answer the following questions:

2a. *Which produced the louder sound?*

- Clap your hands softly. Listen to the sound.
- Now clap them hard. Listen to the sound.

2b. *Which produced the louder sound?*

2c. *We can conclude that when more force was applied, the sound was (softer/louder)*

- Go outside the classroom with a partner.
- Stand close together and whisper “Hellooo” to each other. (soft sound)
- Now stand far apart, and shout “Hellooo” to each other. (loud sound)
- Put your hand on your throat, when you whisper and when you shout.

2d. *Which activity took more effort/energy from you?*

2e. *Therefore, when more energy is used for a sound, the sound will be _____*

2f. *What can you say about the vibrations in your throat when you made the 2 sounds?*

26. Read through task 2 with the learners.
27. Tell the learners they have 5 minutes to complete task 2.
28. Supervise the learners whilst they complete the task and answer any questions they may have.
29. After 5 minutes call the learners back to attention.
30. Tell the learners that they are now going to complete a third task.
31. Copy the information below onto the chalkboard.

TASK 3: (10 MARKS)

- Fill the three glass bottles/jars that are the same size, with different amounts of water.
- Arrange them from left to right, from least amount of water, to most amount of water.

Answer the following questions:

3a. *Look carefully at the bottles/jars. Which bottle/jar has the most amount of air space inside for*

the vibrations to move?

- Now tap each bottle with the metal spoon and listen carefully.

3b. *Which bottle/jar makes the highest sound?*

3c. *Which bottle/jar makes the lowest sound?*

3d. *What do you think the reason for this is?*

- Now empty one of the glass bottles/jars.
- Next, take the coke bottle, the coke can and glass bottle/jar.
- Notice which has the widest opening.
- Blow across the open edge of each one to try and make a whistling sound.
- Listen carefully.

3e. *Which container produced the highest sound?*

3f. *Which container produced the lowest sound?*

3g. *What do you think the reason for this is?*

3h. *What does an object produce when it vibrates?*

3i. *What part of the human body processes these vibrations?*

3j. *Deaf people feel the vibrations in their _____.*

32. Read through task 3 with the learners.

33. Ask them if they have any questions.

34. Tell the learners they have 10 minutes to complete task 3.

35. Supervise the learners whilst they complete the task and answer any questions they may have.

36. After 10 minutes call the learners back to attention.

37. Tell the learners to return all equipment and to tidy their work areas.

**Practical Task
Memorandum**

CAPS Topic	Task	Expected answer/outcome	Marks
	1		
Energy and Sound	1a	The longer length. ✓	1
Energy and Sound	1b	Yes ✓	1
Energy and Sound	1c	The longer the object, the longer and further it vibrates and the stronger you can feel the vibrations. ✓ ✓	2
	2		
Energy and Sound	2a	When the desk was tapped harder. ✓	1
Energy and Sound	2b	When the hands were clapped harder. ✓	1
Energy and Sound	2c	Louder ✓	1
Energy and Sound	2d	Shouting ✓	1
Energy and Sound	2e	Louder ✓	1
Energy and Sound	2f	Vibrations were stronger when shouting. ✓	1
	3		
Energy and Sound	3a	The one on the left (Least amount of water). ✓	1
Energy and Sound	3b	The one on the left (Least amount of water). ✓	1
Energy and Sound	3c	The one on the right (Most amount of water). ✓	1
Energy and Sound	3d	Answers will vary, e.g.: More space for vibration ✓	1
Energy and Sound	3e	Answer will vary depending on glass jars used for previous task. ✓	1
Energy and Sound	3f	Answer will vary depending on glass jars used for previous task. ✓	1
Energy and Sound	3g	Answers will vary, e.g.: ✓ <ul style="list-style-type: none"> • Size of container • Shape of container • Material used to make container – steel, plastic, aluminium, etc. 	1
Energy and Sound	3h	Sound waves ✓	1
Energy and Sound	3i	Ears ✓	1
Energy and Sound	3j	Bodies ✓	1
			TOTAL 20

Test

20 Marks

40 Minutes

NOTE TO THE TEACHER:

If possible, photocopy this test for each learner. If this is not possible, write the test on the chalkboard.

INSTRUCTIONS TO THE LEARNERS

1. Answer all questions in blue or black ink.
2. Read each question carefully before answering it.
3. Pay attention to the mark allocations.
4. Plan your time carefully.
5. Write your answers in the spaces provided.
6. Write neatly.

PRACTICE QUESTION

Read the question and circle the letter that shows the correct answer.

1. Which of the following is a source of energy for plants?
 - a. water
 - b. sunlight
 - c. wind
 - d. rain

You have answered correctly if you have circled **(b)**

QUESTION 1: MULTIPLE CHOICE

[4]

Read each question and circle the letter that shows the correct answer.

- 1a. The Sun provides us with two kinds of energy. These are:
- a. light and plants
 - b. light and glucose
 - c. heat and light
 - d. glucose and heat
- 1b. Which of these statements is FALSE?
- a. In a food chain, arrows are used to show the direction of the energy flow.
 - b. Food chains can link up to form a food web.
 - c. Light is not a form of energy.
 - d. Heat is energy we can feel.
- 1c. When we burn wood, the energy in the wood is transferred into:
- a. light and heat
 - b. ash and coal
 - c. heat and smoke
 - d. smoke and steam
- 1d. Animals that eat only plants are called:
- a. Omnivores
 - b. Vegetarians
 - c. Herbivores
 - d. Carnivores

QUESTION 2

[6]

Write one word that means the same as the sentence:

- 2a. Electricity that is made by the movement of water. _____
- 2b. A unit for measuring the loudness of sounds. _____
- 2c. The measure of the warmth or coldness of an object or a place. _____
- 2d. Energy that we can hear. _____
- 2e. Energy that we can feel. _____
- 2f. How loud or soft a sound is. _____

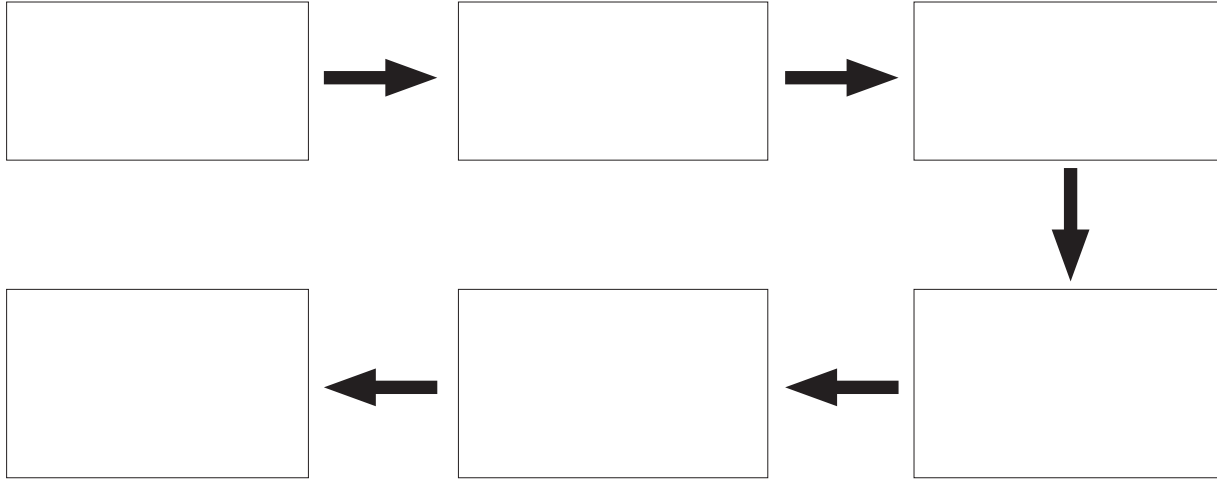
Grade 4 Natural Sciences & Technology Term 3 Assessment

QUESTION 3

[6]

Explain, using a flow diagram (and including the words below) how energy might be transferred from the sun to the movement of a soccer ball.

Sun, light, heat, plants, energy, transfer, animals, herbivore, person, eat, kick



QUESTION 4

[4]

Using a wood fire as an example, explain what input energy and output energy means.

[Total: 20]

Grade 4 Natural Sciences & Technology Term 3 Assessment

Test Memorandum

CAPS Topic	Questions	Expected answer(s)	Marks
	1		
Energy and Energy Transfer	1a	C ✓	1
Energy and Energy Transfer	1b	C ✓	1
Energy around us	1c	A ✓	1
Energy and Energy	1d	C ✓	1
	2.		
Energy around us	2a	hydroelectric energy ✓	1
Energy and Sound	2b	decibel(s) ✓	1
Energy and change, Systems and Control	2c	temperature ✓	1
Energy and Sound	2d	sound ✓	1
Energy and Sound	2e	vibrations ✓	1
Energy and Sound	2f	volume ✓	1
	3		
Energy around us	3		6
<pre> graph TD A["The sun gives off heat and light energy."] --> B["Plants absorb light and heat energy and make food."] B --> C["Animal eats the plants, energy is transferred."] C --> D["Animal eats the animal, energy is transferred"] D --> E["Person eats the animal, energy is transferred."] E --> F["Person kicks the soccer ball and the energy is transferred from the person to the ball and the ball moves forward."] </pre> <p style="text-align: center;">✓ ✓ ✓ ✓ ✓ ✓ (1 mark for each stage)</p>			
	4.		
Energy around us	4	<ul style="list-style-type: none"> • The wood is the input. ✓ • The heat is the output. ✓ • The more input energy there is, the more output energy there will be (more wood, means more heat). ✓ • Fire is the process that turns the input energy into heat. ✓ 	4
TOTAL 20			