

FIRST TERM

WEEKLY LESSON NOTES

WEEK 9

Week Ending: 30-11-2023	DAY:	Subject: Science
Duration: 100mins		Strand: Forces & Energy
Class: B9	Class Size:	Sub Strand: Energy
Content Standard: B9.4.1.1 Show understanding of the concept of conservation of energy and ways of conserving energy	Indicator: B9.4.1.1.1 List the ways to conserve energy. Examples: ironing in bulk, using energy efficient appliances and switching off appliances when not in use.	Lesson: 1 of 3
Performance Indicator: Learners can explore and identify various strategies for conserving energy.		Core Competencies: Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation
References: Science Curriculum Pg. 106		
New words: Energy Conservation, Sustainable Practices, Energy Efficiency,		
Phase/Duration	Learners Activities	Resources
PHASE 1: STARTER	<p>Begin the lesson with a simple question: "What do you think it means to conserve energy?"</p> <p>Allow learners to share their initial thoughts and ideas. Write their responses on the board.</p> <p>Share learning indicators and introduce the lesson.</p>	
PHASE 2: NEW LEARNING	<p>Facilitate a discussion on the importance of conserving energy and its impact on the environment.</p> <p>Introduce key terms such as energy conservation, sustainable practices, and energy efficiency.</p> <p>Ask learners to brainstorm everyday activities that require energy and ways these activities can be done more efficiently.</p> <p>Divide learners into small groups. Provide each group with a list of energy conservation tips.</p> <p>Ask them to discuss and categorize the tips into practical strategies for conserving energy at home, school, or in their community.</p> <p>Have each group present their categorized tips to the class.</p> <p>Challenge learners to identify and list electronic devices that consume energy when turned off.</p> <p>Discuss strategies to reduce phantom energy consumption.</p>	<p>Pictures and charts</p> <p>Interactive activities related to energy conservation</p>

	<p>Have learners come up with additional energy conservation tips and encourage learners to pick one tip to implement in their daily lives.</p> <p><u>Assessment</u></p> <ol style="list-style-type: none"> 1. Explain the concept of energy conservation in your own words. Why is it important in our daily lives? 2. Discuss a specific energy conservation tip that you find practical and explain how you can implement it at home or school. 3. What are sustainable practices, and how do they contribute to energy conservation? 	
<p>PHASE 3: REFLECTION</p>	<p>Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.</p> <p>Take feedback from learners and summarize the lesson.</p>	

Week Ending: 30-11-2023		DAY:	Subject: Science
Duration: 100mins		Strand: Forces & Energy	
Class: B9	Class Size:	Sub Strand: Energy	
Content Standard: B9.4.1.1 Show understanding of the concept of conservation of energy and ways of conserving energy		Indicator: B9.4.1.1.2 Explain the importance of energy conservation in daily life.	Lesson: 2 of 3
Performance Indicator: Learners can explore and understand the importance of energy conservation in their daily lives.		Core Competencies: Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation	
References: Science Curriculum Pg. 107			
New words: Energy Conservation, Sustainability, Environmental Impact, Renewable Energy			
Phase/Duration	Learners Activities	Resources	
PHASE 1: STARTER	<p>Begin the lesson by asking learners a thought-provoking question: "Why do you think saving energy is important in our daily lives?"</p> <p>Allow learners to share their initial thoughts and experiences. Write their responses on the board to create a visual reference for the discussion.</p> <p>Share learning indicators and introduce the lesson.</p>		
PHASE 2: NEW LEARNING	<p>Discuss the importance of gathering information to understand complex topics like energy conservation.</p> <p>Introduce the main question: "Why is energy conservation important in our daily lives?"</p> <p>Explain that learners will conduct research to find information on this topic.</p> <p>Provide learners with guiding questions on energy conservation, such as:</p> <ul style="list-style-type: none"> • What are the environmental benefits of energy conservation? • How does energy conservation contribute to sustainability? • In what ways can individuals save energy in their daily activities? <p>Allow learners to use computers or tablets to research and gather information.</p> <p>Form small groups and have learners discuss their findings. Encourage them to share insights, ask questions, and consider different perspectives on the importance of energy conservation.</p>	Pictures and charts	

	<p>Facilitate a whole-class discussion where each group shares key points from their research.</p> <p>Summarize the collective understanding of why energy conservation is crucial in daily life.</p> <p><u>Assessment</u></p> <ol style="list-style-type: none"> 1. Based on your research, what are the environmental benefits of energy conservation? 2. How does energy conservation contribute to the concept of sustainability? 3. In what ways can individuals save energy in their daily activities? Provide specific examples. 4. Reflect on your own habits: What changes can you make in your daily life to contribute to energy conservation? 	
<p>PHASE 3: REFLECTION</p>	<p>Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson.</p> <p>Take feedback from learners and summarize the lesson.</p>	

Week Ending: 30-11-2023		DAY:	Subject: Science
Duration: 100mins		Strand: Forces & Energy	
Class: B9	Class Size:	Sub Strand: Energy	
Content Standard: B9.4.1.2 Demonstrate understanding in and the capability to do calculations involving energy.		Indicator: B9.4.1.2.1 Explain how to calculate energy consumed over a period of time	Lesson: 3 of 3
Performance Indicator: Learners can calculate electrical energy consumption using the formula $P = IV$, where P is power, I is current, and V is voltage and apply this knowledge to calculate energy consumption in Kilowatt-hours (kWh) for common electrical appliances.		Core Competencies: Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation	
References: Science Curriculum Pg. 106			
New words: Electrical Energy Consumption;, Power, Voltage (V) and Current (I), Kilowatt-hour (kWh)			
Phase/Duration	Learners Activities	Resources	
PHASE 1: STARTER	<p>Begin the lesson with a real-world scenario: "Imagine you have a device that uses electrical energy. How do you think we can measure and calculate the amount of energy it consumes?"</p> <p>Allow learners to share their initial thoughts, and write their responses on the board. Introduce the term "electrical energy consumption" and explain that it's measurable using specific formulas.</p> <p>Share learning indicators and introduce the lesson.</p>		
PHASE 2: NEW LEARNING	<p>Introduce the formula $P = IV$, explaining that it is used to calculate power when voltage (V) and current (I) are known.</p> <p>Discuss the concept of power and its relevance to electrical energy consumption.</p> <p>Provide examples of electrical appliances and their power ratings.</p> <p>Guide learners through the calculation of electrical energy consumption in kilowatt-hours (kWh) using the formula $P = IV$.</p> <p>Distribute a list of typical power ratings for common electrical appliances.</p> <p>In pairs or small groups, have learners calculate the energy consumption (kWh) for each appliance using the formula.</p> <p>Facilitate a discussion where each group shares their findings and discusses any challenges faced during the calculations.</p> <p>Encourage learners to compare the energy consumption of different appliances.</p>	<p>Pictures and charts List of typical power ratings for common electrical appliances</p>	

Give learners a set of practice problems or scenarios that involve calculating energy consumption for various appliances.

Encourage learners to apply the formula independently, and circulate the room to provide assistance as needed.

Example:

Calculate the energy consumption (in kWh) for a device with a power rating of 500 watts running for 3 hours

Solution

To calculate the energy consumption (in kilowatt-hours, kWh) for a device with a power rating of 500 watts running for 3 hours, you can use the formula:

$$\text{Energy Consumption (kWh)} = \frac{\text{Power (Watts)} * \text{Time (Hours)}}{1000}$$

Given:

- Power (P) = 500 watts

- Time (t) = 3 hours

Substitute these values into the formula:

$$\text{Energy Consumption (kWh)} = \frac{500 * 3}{1000}$$

$$\text{Energy Consumption (kWh)} = \frac{1500}{1000}$$

$$\text{Energy Consumption (kWh)} = 1.5 \text{ kW}$$

Therefore, the energy consumption for the device is 1.5 kilowatt-hours.

Assessment

1. Calculate the energy consumption (in kWh) for a device with a power rating of 500 watts running for 3 hours.
2. List two factors that contribute to the power consumption of an electrical appliance. How might you reduce the energy consumption of a device?
3. A computer has a power rating of 120 watts. If it runs continuously for 5 hours, what is the energy consumption in kilowatt-hours?
4. An LED light bulb has a power rating of 9 watts. If it is used for 8 hours per day, how much energy does it consume in kilowatt-hours over a week?
5. A microwave oven has a power rating of 800 watts. If it is used for 10 minutes to heat food, what is the energy consumption in kilowatt-hours?

PHASE 3: REFLECTION	Use peer discussion and effective questioning to find out from learners what they have learnt during the lesson. Take feedback from learners and summarize the lesson.	
--------------------------------------	---	--