SECOND TERM
WEEKLY LESSON NOTES
WEEK 1

Week Ending: 12-01-2024	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Cycles	
Class: B9	**Class Size:**	**Sub Strand:** Crop production	
Content Standard: B9.2.3.1 Show an understanding of differences in maturities of different crops grown in different soils and different seed beds	**Indicator:** B9.2.3.1.1 Observe and describe differences in maturation of crops grown in different soils and on different seed beds.	**Lesson:** 1 of 2	
Performance Indicator: Learners can observe and record the maturation stages of different crops in various soils and seed beds.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation		
References: Science Curriculum Pg. 96			
Key words: Maturation Stages, Soil Influence, Seed Bed Impact**, Soil Composition:**			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a brief discussion about the factors that influence plant growth. Ask learners to share their thoughts on what plants need to grow successfully. Emphasize the importance of these factors in the growth and maturity of crops. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Set up different stations with various soils and seed beds. Plant different crops in each station. Assign groups to each station. In their groups, learners observe and record the maturity stages of the crops in each station. They can use notebooks or observation sheets to document their findings. After a set time, rotate the groups to different stations, allowing learners to observe and record the maturity stages of different crops in various soils and seed beds. Have each group share their observations and recordings with the class. Discuss the differences in maturity stages among the different crops in different environments. Engage the class in a discussion about the impact of soil and seed bed variations on plant growth. Encourage learners to share their insights and draw connections between their observations and the key words introduced earlier.	Various crops (e.g., beans, corn, or radishes) Different types of soil (e.g., clay, sand, loam) Various seed beds (e.g., raised beds, traditional beds)

	<u>Assessment</u> 1. "How did the different soils and seed beds influence the maturity stages of the crops you observed?" 2. "What patterns or similarities did you notice in the growth of crops in specific soil types or seed beds?" 3. "Reflect on the role of soil composition in supporting plant growth. How does it affect maturity stages?" 4. "In what ways does observing and recording crop maturity stages enhance our understanding of plant development and agricultural practices?"	
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.	

Week Ending: 12-01-2024	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Cycles	
Class: B9	**Class Size:**	**Sub Strand:** Crop production	
Content Standard: B9.2.3.1 Show an understanding of differences in maturities of different crops grown in different soils and different seed beds	**Indicator:** B9.2.3.1.1 Observe and describe differences in maturation of crops grown in different soils and on different seed beds.	**Lesson:** 1 of 2	
Performance Indicator: Learners can compare and contrast the maturity stages of crops and seedlings in the community/school garden with those grown in external locations.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation		
References: Science Curriculum Pg. 96			
Key words: Comparative Analysis, Environmental Factors, Community/School Garden			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a reflective question: "What factors do you think influence the growth and maturity of plants in our community/school garden?" Allow learners to share their thoughts and experiences. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	In small groups, provide learners with notebooks or observation sheets. Ask them to observe and record the maturity stages of crops and seedlings in the community/school garden. Visual Aids: Use visual aids, such as pictures or charts, to show images of crops and seedlings grown in external locations. Discuss the environmental factors that may influence their growth. Encourage groups to discuss and compare their observations with the images of crops from external locations. Learners should focus on similarities and differences in maturity stages and consider environmental factors. Each group shares their comparative analysis findings with the class. Encourage learners to articulate their observations and insights. Facilitate an open discussion where learners can ask questions, express opinions, and engage with their peers. Encourage critical thinking and deeper analysis of the factors influencing crop maturity. <u>Assessment</u>	Seeds or small plants from the community/school garden

	1. "What similarities and differences did you observe in the maturity stages of crops in our community/school garden compared to external locations?" 2. "Reflect on the impact of environmental factors on crop maturity. How do they contribute to the differences observed?" 3. "In what ways does a comparative analysis enhance our understanding of plant growth and environmental influences?" 4. "How might community or school initiatives improve the conditions for crop growth, considering what you've learned about external environments?"	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 2

Week Ending: 19-01-2024	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Cycles	
Class: B9	**Class Size:**	**Sub Strand:** Crop production	
Content Standard: B9.2.3.2 Demonstrate knowledge and understanding of uses of different crops at different maturity stages	**Indicator:** B9.2.3.2.1 Observe and record the uses of different crops at different maturity stages		**Lesson:** 1 of 2
Performance Indicator: Learners can discuss and write about the uses of each maturity stage of identified crops.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy		
References: Science Curriculum Pg. 96			
Key words: Maturity Stages, Utilization, Agricultural Products, Culinary			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a thought-provoking question: "Can you think of ways in which different stages of plant growth might be useful to us?" Allow learners to share their initial thoughts and experiences. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define the term "maturity stages" in the context of crop development. Discuss the significance of each stage in the life cycle of a crop. Divide the class into small groups and assign each group a common crop (e.g., wheat, rice, tomato, maize). Instruct each group to research and discuss the uses of each maturity stage of their assigned crop. Groups create a visual representation or chart listing the uses at each stage. Each group presents their findings to the class, contributing to a collective chart on the board. <u>Assessment</u> 1. What environmental factors influence the germination stage, and how can farmers optimize them for better crop establishment? 2. How does nutrient management play a vital role in maximizing the vegetative stage, and what are the potential challenges in nutrient uptake?	Pictures and charts
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.	

Week Ending: 19-01-2024	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Cycles
Class: B9	**Class Size:**	**Sub Strand:** Crop production

Content Standard: B9.2.3.2 Demonstrate knowledge and understanding of uses of different crops at different maturity stages	**Indicator:** B9.2.3.2.1 Observe and record the uses of different crops at different maturity stages	**Lesson:** 1 of 2

Performance Indicator: Learners can categorize crops based on their different maturity stages and identify their uses.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy

References: Science Curriculum Pg. 96

Key words: Categorization, Crop Maturity Stages, Utilitarian, Collaborative Learning

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a visual stimulus: display images of crops in different maturity stages. Ask learners to describe what they observe and think about how the maturity stages might impact the uses of these crops. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Briefly review the concept of crop maturity stages and their importance in agriculture. Introduce the lesson's objective: to categorize crops based on their maturity stages and understand their uses. Discuss why it's valuable for farmers and agriculturalists to know the maturity stages of different crops. Provide information on various crops, including details about their maturity stages and common uses. Ensure diversity in the types of crops presented. Divide the class into small groups. Assign each group a set of crops to categorize based on their maturity stages and uses. Groups collaboratively categorize the assigned crops, creating charts or diagrams to represent their findings. Encourage discussions on the reasoning behind their categorizations. Each group presents their categorization to the class, explaining the rationale behind their decisions. Ask each student to write a brief reflection on the collaborative categorization activity. <u>Assessment</u>	Pictures and charts

	1. "In what ways does categorizing crops by maturity stages and uses align with the utilitarian aspect of agriculture?" 2. What are the key factors influencing successful pollination during the reproductive stage, and how can farmers enhance pollination efficiency? 3. How can farmers determine the optimal time for harvesting, and what factors contribute to the overall quality of the harvested crop?	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 3

Week Ending: 26-01-2024	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Cycles	
Class: B9	**Class Size:**	**Sub Strand:** Crop production	
Content Standard: B9.2.3.2 Demonstrate knowledge and understanding of uses of different crops at different maturity stages	**Indicator:** B9.2.3.2.2 Evaluate the importance of knowledge of maturity stages of different crops to human beings	**Lesson:** 1 of 2	
Performance Indicator: Learners can evaluate the importance of knowledge about the maturity stages of different crops.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation		
References: Science Curriculum Pg. 98			
Key words: Agricultural Sustainability, Interdependence, Ecosystem Services, Holistic Perspective			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a thought-provoking question: "Why do you think it's important for farmers and gardeners to understand the different stages of a plant's growth?" Allow learners to share their initial thoughts and experiences. This will set the stage for discussing the importance of knowledge about crop maturity stages. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define the term "crop maturity stages" and discuss the different stages (seedling, vegetative, flowering, fruiting, ripening). Explain that each stage has specific uses and benefits for humans, other crops, animals, and the environment. Present examples of different crops and discuss the specific uses and benefits at each maturity stage. Use the whiteboard or chart paper to create a visual representation. Break the class into small groups and provide each group with information on a specific crop. Instruct them to research and create a presentation on the uses of each maturity stage for humans, other crops, animals, and the environment. Each group presents their findings to the class, fostering a collective understanding of the diverse uses of crop maturity stages. Conduct a brief discussion on how climate and geographical factors can influence the timing of maturity stages in crops.	Pictures and charts, Information on various crops, maturity stages, and uses

	Relate this information to the importance of selecting suitable crops for a specific region. <u>Assessment</u> 1. How did considering the uses of each maturity stage from a holistic perspective contribute to your understanding of agricultural sustainability?" 2. In what ways do the uses of crop maturity stages illustrate the interdependence of humans, other crops, animals, and the environment?" 3. How might a farmer or gardener benefit from having a comprehensive understanding of the uses of different maturity stages in crop management?" 4. How do the uses of crop maturity stages contribute to the provision of ecosystem services?"	
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.	

Week Ending: 26-01-2024	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Cycles
Class: B9	**Class Size:**	**Sub Strand:** Crop production

Content Standard: B9.2.3.2 Demonstrate knowledge and understanding of uses of different crops at different maturity stages	**Indicator:** B9.2.3.2.2 Evaluate the importance of knowledge of maturity stages of different crops to human beings	**Lesson:** 1 of 2

Performance Indicator: Learners can compare different stages of maturity of crops in the community with those used in other places	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 98

Key words: Agroecology, Optimization, Cultivar, Comparative Analysis

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a scenario-based question: "Imagine you are a farmer and have a choice of growing two different crops. What factors would you consider in selecting the crops to plant?" Allow learners to brainstorm and share their thoughts. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Provide information on various crops, including details about their maturity stages, growth conditions, and optimal uses. Divide the class into small groups. Assign each group a specific crop to explore in terms of maturity stages and crop management. Groups collaboratively explore and discuss how knowledge of the maturity stages of their assigned crop helps a farmer in crop selection, timing of harvest, and other aspects of crop management. Encourage a practical and agro ecological perspective. Each group presents their findings to the class, focusing on the practical applications of knowledge about crop maturity stages for crop management. Ask each student to write a brief reflection on what they learned about the role of maturity stages in crop management. How might this knowledge impact their decisions as a farmer? <u>Assessment</u> 1. How does knowledge of maturity stages contribute to effective crop selection and management?" 2. In what ways does understanding crop maturity stages align with the principles of agroecology?" 3. "How might a farmer benefit from optimizing crop management based on knowledge of maturity stages, especially in terms of harvest timing?"	Pictures and charts, Samples of crops from the community

	4. Compare the crop management strategies discussed in your group with those of another group. What similarities or differences did you find?"	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 4

Week Ending:	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Cycles	
Class: B9	**Class Size:**	**Sub Strand:** Animal Production	
Content Standard: B9.2.4.1 Demonstrate understanding of the preparation of feed for domestic and commercial animals	**Indicator:** B9.2.4.1.1 List the ingredients and the method of preparation of different feed for different domestic and commercial animals		**Lesson:** 1 of 2
Performance Indicator: Learners can formulate and prepare feed for domestic and commercial animals	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation		
References: Science Curriculum Pg. 99			
Key words: preparation, domestic, commercial, ingredients			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Revise with learners on the previous lesson using questions and answers. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Brainstorm the meaning of animal feed from learners. *Animal feed is essentially specially formulated food designed for domestic animals, especially livestock, to keep them healthy and productive*. Guide learners to identify and describe the types of animal feed • *Fodder: Concentrated feeds like grains, oilseed meals, and animal byproducts, often high in energy and protein. Think animal versions of protein bars!* • *Forage: Bulkier feeds like grasses, hay, and silage, providing fiber and essential nutrients. Imagine salad buffets for cows!* Learners in their groups give examples of animal feed. • *Corn, soybeans, and hay are common ingredients in commercial feeds.* • *Brewers' grains from beer production and leftover food scraps can also be used.* • *Animal feed plays a crucial role in modern agriculture, influencing the entire food chain.* Demonstrate how farmers prepare feed for different domestic and commercial animals with ingredients. Example: Chicken feed *Step 1: Milling:* • *Grains like corn, wheat, and soybeans are the primary ingredients.* • *Farmers grind these grains into smaller particles using large mill machines. Think giant coffee grinders!*	Pictures and charts

	Step 2: Mixing: • *The milled grains are then mixed with other ingredients like protein supplements, vitamins, minerals, and sometimes even antibiotics. Imagine a giant mixer tossing everything together!* *Step 3: Pelleting (optional):* • *For pelleted feed, the mash is moistened and fed into a pelleting machine, which forces it through dies with small holes, forming the pellets. Think of a pasta machine for chickens!* *Step 4: Cooling and drying:* • *Both mash and pellets need to be cooled and dried to prevent spoilage. This is often done using large conveyors with fans blowing cool air over the feed. Think of a giant salad spinner for chicken feed!* *Step 5: Storage:* • *The finished feed is then stored in silos or bins until it's ready to be used. Imagine giant chicken pantries!* Write down the process of preparing feed for different domestic and commercial animals with the ingredients. Compile a table, matching feed, ingredients and method of preparation. Formulate and prepare feed for domestic and commercial animals. <u>Assessment</u> 1. What are the two main types of animal feed, and how do they differ in terms of texture and nutritional value? 2. Why is animal feed important for modern agriculture, beyond just keeping animals fed? 3. Can you name some examples of common ingredients used in different types of animal feed, and explain their role in animal nutrition? 4. Imagine you're a farmer creating a special feed mix for your pigs. What factors would you consider when choosing the ingredients and their proportions?	
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.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Cycles
Class: B9	**Class Size:**	**Sub Strand:** Animal Production

Content Standard: B9.2.4.2 Demonstrate skills and knowledge of feeding domestic and commercial animals	**Indicator:** B9.2.4.2.1 Describe and select appropriate feed for different domestic and commercial animals	**Lesson:** 1 of 2
Performance Indicator: Learners can describe and select appropriate feed for different domestic and commercial animals	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation	
References: Science Curriculum Pg. 99		
Key words: Ruminants, Monogastrics, Nutrient Requirement, Feeding Practices		

<table>
<tr><td>Phase/Duration</td><td>Learners Activities</td><td>Resources</td></tr>
<tr><td>PHASE 1:
STARTER</td><td>Revise with learners on the previous lesson using questions and answers.

Share learning indicators and introduce the lesson.</td><td></td></tr>
<tr><td>PHASE 2: NEW LEARNING</td><td>Divide learners into groups.

Let each group compile a list of feed commonly consumed by the different domestic and commercial animals in the environment.

<table>
<tr><td>Domestic Animals</td><td>Commercial Animals:</td></tr>
<tr><td>Dogs: Commercial kibble (dry or wet), raw or cooked meat and bones, vegetables, fruits (in moderation).</td><td>Cattle (Beef and Dairy): Hay, silage (fermented forage), grains (corn, barley, wheat), protein supplements like soybean meal</td></tr>
<tr><td>Cats: Commercial dry or wet food, cooked or raw meat (especially poultry), small amounts of canned tuna or salmon</td><td>Poultry (Chickens, Turkeys): Mash or pelleted feed with grains, protein sources like soybean meal, vitamins, minerals.</td></tr>
<tr><td>Horses: Hay, grains (oats, barley, corn), grass, vegetables, fruits</td><td>Pigs: Mash or pelleted feed with grains, protein sources like soybean meal, minerals, some fruits and vegetables.</td></tr>
<tr><td>Rabbits: Hay, pellets formulated for rabbits, leafy greens, carrots, herbs.</td><td>Sheep and Goats: Hay, pasture grazing, grains (oats, barley), minerals, occasional fruits and vegetables</td></tr>
<tr><td>Hamsters and Gerbils: Pellets designed for rodents, fresh</td><td>Fish: Pelleted feed containing grains, fish meal, vegetable oils,</td></tr>
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</td><td>Pictures and charts</td></tr>
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vegetables, seeds, nuts (in moderation). Birds: Seed mixes specific to bird species, fruits, vegetables, pellets formulated for birds	vitamins, minerals, tailored to specific fish species

Guide learners to compare and contrast the characteristics of different kinds of feed commonly consumed by categories of domestic and commercial animals (ruminants, monogastrics, and poultry).

Have them record feed used to feed domestic and commercial animals on farms over a period of time.

Identify named samples of feed for three categories of domestic and commercial animals (ruminants, monogastrics, and poultry)

<u>Ruminants</u>

- *Forage: Grasses, legumes, and silages are the primary feed source for ruminants like cows, sheep, and goats. These provide essential fiber and nutrients for their digestive system.*
- *Concentrates: Grain-based feeds like corn, barley, and oats are often supplemented to provide additional energy and protein, especially during lactation or growth periods.*
- *By-products: Food industry by-products like beet pulp, citrus peel, and brewer's grains can be a cost-effective source of fiber and nutrients for ruminants*.

Monogastrics:

- *Grains: Cereals like corn, wheat, and barley are the main energy source for monogastric animals like pigs and poultry. They are often processed into pellets or mash for easier consumption.*
- *Protein sources: Soybeans, fish meal, and meat meal are crucial for providing essential amino acids that monogastric animals cannot synthesize themselves.*
- *Vitamins and minerals: Premixes containing essential vitamins and minerals are often added to monogastric feeds to ensure complete nutrition and prevent deficiencies.*

<u>Poultry</u>:

- *Starter crumbles: Finely ground feed with high protein content is essential for chicks during their initial growth phase.*
- *Grower mash: As chicks mature, their feed transitions to a coarser mash with balanced protein and energy levels for continued growth and development.*
- *Laying pellets: Hens require calcium-rich feed for strong eggshells and optimal egg production. Laying pellets are specially formulated to meet their nutritional needs.*

<u>Assessment</u>

1. Imagine you're feeding a young goat just starting to eat solid food. Which of the listed samples would be most appropriate and why?
2. Which category of animals (ruminants, monogastrics, or poultry) has the simplest digestive system, and how does their feed reflect that?

	3. Beyond the listed samples, what are some unconventional or locally available feed options for any of the mentioned animal categories? 4. If you were formulating a new type of animal feed, what specific nutritional needs would you prioritize and why?	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 5

Week Ending:	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Cycles	
Class: B9	**Class Size:**	**Sub Strand:** Animal Production	
Content Standard: B9.2.4.2 Demonstrate skills and knowledge of feeding domestic and commercial animals	**Indicator:** B9.2.4.2.2 Differentiate between different types of feed for different stages of domestic and commercial animals.		**Lesson:** 1 of 2
Performance Indicator: Learners can categorize different types of animals based on their stages of growth (young, growing, and matured).	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation		
References: Science Curriculum Pg. 101			
Key words: Ruminants, Monogastrics, Nutrient Requirement, Feeding Practices			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a question: "Can you think of different animals you've seen or heard about and describe how they change as they grow?" Allow students to share their thoughts and experiences. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Provide information on various animals, including details about their growth stages and typical nutrient requirements. Divide the class into small groups. Assign each group a specific category of animals (ruminants, monogastrics, or poultry) to focus on during the activity. Groups collaboratively categorize animals based on their stages of growth (young, growing, and matured). Additionally, they list the types of feed used for each growth stage. Each group presents their findings to the class, explaining the categorization and feeding practices for their assigned category of animals. Encourage discussions on the reasoning behind their choices. <u>Assessment</u> 1. How might understanding the growth stages of animals influence feeding strategies for farmers or animal caretakers?"	Pictures and charts

	2. In what ways do the nutrient requirements of ruminants differ from those of monogastrics and poultry at various stages of growth?" 3. Compare the feeding practices discussed by your group with those of another group. What similarities or differences did you find?"	
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.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Cycles
Class: B9	**Class Size:**	**Sub Strand:** Animal Production

Content Standard: B9.2.4.2 Demonstrate skills and knowledge of feeding domestic and commercial animals	**Indicator:** B9.2.4.2.2 Differentiate between different types of feed for different stages of domestic and commercial animals.	**Lesson:** 1 of 2

Performance Indicator: Learners can categorize different types of animals based on their stages of growth (young, growing, and matured).	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation
References: Science Curriculum Pg. 101	
Key words: Ruminants, Monogastrics, Nutrient Requirement, Feeding Practices	

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin by asking students what they know about animal feed and its importance. Introduce the concept of different animal growth stages and how their nutritional needs change. Briefly discuss the three main animal categories (ruminants, monogastrics, and poultry) and their basic digestive systems. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Categorize different types of animals according to their stages of growth (young, growing and matured stages). Divide students into small groups. Show pictures of different animals at different growth stages (e.g., chick, young pig, adult cow). Present pictures of various types of feed (e.g., corn kernels, hay, fish meal, chick crumbles). Students, in their groups, must match the appropriate feed to each animal stage and explain their reasoning. Discuss the answers as a class, highlighting the changing needs of animals and the role of different feed components. Divide the class into three groups, each assigned a specific animal category (ruminants, monogastrics, poultry). Provide each group with pictures of their assigned animal at different stages and information about their digestive systems.	Pictures of different animals at different growth stages (e.g., chicks, puppies, calves, lambs) Pictures of various types of feed (e.g., hay, corn, fish meal, pellets)

	Challenge each group to create a chart or diagram showing the major functions of feed in each growth stage for their assigned animal. Groups present their findings to the class, explaining the changing role of feed through an animal's life. Show or discuss a case study of a local farm or animal production facility. Challenge students to analyze the types of feed used for different animals at the facility based on their growth stages and production goals. Encourage discussion about the importance of proper nutrition for animal health, welfare, and economic success. <u>Assessment</u> 1. Imagine you're feeding a young calf that's just been weaned off its mother's milk. Based on what you learned about feed functions and types, what kind of food would be most suitable for it and why? 2. Can you explain the difference in the main energy sources used by ruminants like cows and monogastrics like pigs? How does this relate to the types of feed they typically eat? 3. We learned about some common types of feed for different animals. Can you think of any examples of unconventional or locally available feed options that farmers might use in different parts of the world? 4. If you were designing a special food for animals living in cold climates, what nutrients would you prioritize and why? How might this differ from feed for animals in hot climates?	
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.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Cycles
Class: B9	**Class Size:**	**Sub Strand:** Animal Production

Content Standard: B9.2.4.2 Demonstrate skills and knowledge of feeding domestic and commercial animals	**Indicator:** B9.2.4.2.3 Perform the feeding of domestic and commercial animals.	**Lesson:** 1 of 2

Performance Indicator: Learners can observe and practice how to feed domestic and commercial animals at different growth stages.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 102

Key words:

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Briefly discuss the importance of proper feeding for animal health and production. Introduce the different animals they will encounter and their stages of growth. Emphasize safety guidelines and responsible interactions with the animals. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Divide students into small groups and assign each group to a specific animal. Provide information sheets about the assigned animal and discuss its feeding needs. Demonstrate proper feeding techniques, ensuring students understand portion sizes and hygiene practices. Allow students to take turns feeding the animals under adult supervision. Encourage them to observe the animals' behavior and reactions to the different feed types. Gather students as a group and discuss their observations. Ask questions about the different types of feed used, the animals' behavior, and any challenges they encountered. Relate the observed feeding practices to the information sheets and learning objectives. Facilitate a discussion about the importance of responsible animal husbandry and respecting animal welfare through proper feeding.	Access to a school farm or community farm with various animals at different stages (e.g., chickens, rabbits, cattle, goats) Appropriate protective gear (boots, gloves, hats) Buckets or feeding containers

	<u>Assessment</u> 1. Imagine you're feeding a young chick and a grown hen at the farm. Both might eat chicken feed, but would the amount or type be different for each? Why or why not? 2. While observing, did you notice any differences in how the animals reacted to different types of feed? Describe what you saw and try to explain why they might prefer one over the other. 3. If you were helping the farmer prepare feed for the animals, what safety precautions would you remember? Share some important practices you learned during the visit. 4. Based on your experience, what do you think are some of the biggest challenges farmers face in ensuring proper nutrition for their animals? Discuss them with your classmates and brainstorm potential solutions.	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 6

Week Ending:	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Systems	
Class: B9	**Class Size:**	**Sub Strand:** Solar system	
Content Standard: B9.3.2.1 Demonstrate knowledge of other non-planetary bodies such as comets, asteroids, and their relationship with the solar system	**Indicator:** B9.3.2.1.1 Understand the movement of non-planetary bodies in the solar system.	**Lesson:** 1 of 2	
Performance Indicator: Learners can identify and differentiate between asteroids and comets as non-planetary bodies in the solar system. Learners can understand the movement and potential risks posed by asteroids and comets.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation		
References: Science Curriculum Pg. 103			
Key words:			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin by asking learners what they know about the solar system. Introduce the concept of non-planetary bodies, including asteroids and comets. Show pictures or videos of asteroids and comets to familiarize learners with their visual characteristics. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Discuss the composition and location of asteroids, primarily in the asteroid belt between Mars and Jupiter. Explain the different types of asteroids based on their composition (carbonaceous, metallic, etc.). Discuss the potential risks posed by asteroids colliding with Earth, citing historical examples like the Tunguska event. Briefly mention asteroid mining as a potential future resource for humanity. Explain the composition and structure of comets, including the nucleus, coma, and tail. Discuss the role of ice and dust in the formation of comets and their iconic tails. Show how comets' orbits around the sun cause their tails to change and lengthen as they approach.	Pictures and charts Pictures, diagrams, or videos of asteroids and comets Models of the solar system (optional) Materials for a creative project (e.g., construction paper, paint, glitter)

	Explain the connection between comets and meteor showers, citing examples like the Perseids or Geminids. <u>Assessment</u> Challenge learners to create a visual representation of an asteroid or comet using available materials.	
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.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Systems
Class: B9	**Class Size:**	**Sub Strand:** Solar system

Content Standard: B9.3.2.1 Demonstrate knowledge of other non-planetary bodies such as comets, asteroids, and their relationship with the solar system	**Indicator:** B9.3.2.1.1 Understand the movement of non-planetary bodies in the solar system.	**Lesson:** 1 of 2

Performance Indicator: Learners can compare and contrast the orbits, motions, and characteristics of asteroids and comets. Learners can appreciate the dynamic nature of the solar system and the role of movement in shaping its features.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 103

Key words:

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin by reviewing learners' knowledge of the solar system and its various components. Introduce the concepts of asteroids and comets as non-planetary bodies with distinct movements. Briefly mention other non-planetary bodies like meteoroids and dwarf planets for context. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Show diagrams of the asteroid belt and typical comet orbits around the sun. Explain the elliptical nature of asteroid orbits, primarily concentrated between Mars and Jupiter. Discuss the highly eccentric and inclined orbits of comets, often taking them far beyond Pluto. Compare and contrast the orbital periods of asteroids and comets, emphasizing the shorter periods of many asteroids Divide learners into two groups: "Asteroids" and "Comets." Explain that each group will represent the typical motion of their assigned celestial body. Play excerpts of different types of music (fast, slow, chaotic, regular) and have each group move accordingly, mimicking the orbital characteristics of asteroids and comets. Discuss the differences in movement and how they relate to the orbital shapes and speeds of each body	Pictures and charts Diagrams and animations of the solar system, asteroid belt, and comet orbits Models of asteroids and comets, Crayons, markers, or other creative materials

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.	

Week Ending: WEEK 6	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Systems
Class: B9	**Class Size:**	**Sub Strand:** Solar system

Content Standard: B9.3.2.1 Demonstrate knowledge of other non-planetary bodies such as comets, asteroids, and their relationship with the solar system	**Indicator:** B9.3.2.1.1 Understand the movement of non-planetary bodies in the solar system.	**Lesson:** 1 of 2

Performance Indicator: Learners can compare and contrast the orbits, motions, and characteristics of asteroids and comets. Learners can appreciate the dynamic nature of the solar system and the role of movement in shaping its features.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation
References: Science Curriculum Pg. 103	
Key words:	

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin by reviewing learners' knowledge of the solar system and its various components. Introduce the concepts of asteroids and comets as non-planetary bodies with distinct movements. Briefly mention other non-planetary bodies like meteoroids and dwarf planets for context. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Provide learners with a worksheet containing a table with categories like "Orbit Shape," "Period," "Location," and "Composition" for both asteroids and comets. Challenge them to research and fill in the table, comparing and contrasting the main characteristics and movements of each type of non-planetary body. Introduce the concept of comet tails formed by dust and ice as the comet approaches the sun. Provide learners with creative materials like crayons, markers, and paper. Challenge them to design and illustrate different types of comet tails, considering the composition, length, and direction based on the comet's orbit. Allow learners to share their creations and explain their artistic choices about the comet tails.	Pictures and charts Diagrams and animations of the solar system, asteroid belt, and comet orbits Models of asteroids and comets, Crayons, markers, or other creative materials

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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 7

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Systems
Class: B9	**Class Size:**	**Sub Strand:** Ecosystem

Content Standard: B9.3.3.1 Recognize the interdependence of organisms in an ecosystem and appreciate their interaction to maintain balance in the system	**Indicator:** B9.3.3.1.1 Conduct research into the composition of an ecosystem and discuss how the components depend on each other for survival.	**Lesson:** 1 of 1

Performance Indicator: Learners can differentiate between an ecosystem and a habitat and identify their key characteristics and appreciate the interconnectedness of life and the importance of maintaining healthy ecosystems.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 104

Key words:

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin by asking learners what they know about different environments where plants and animals live. Introduce the concept of an ecosystem as a community of living organisms interacting with each other and their non-living environment. Show pictures of various ecosystems around the world to spark their curiosity and showcase diversity Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Choose a specific ecosystem (e.g., a forest) and display related pictures of different organisms (trees, insects, birds, mammals). Explain the concept of interdependence and how organisms rely on each other for survival (food, shelter, pollination, etc.). Divide learners into small groups and provide them with yarn and construction paper. Challenge each group to create a web of interdependence, connecting pictures of organisms with yarn strands based on their interactions and dependencies.	Pictures or diagrams of various ecosystems (forests, deserts, ponds, etc.) Pictures of different organisms within each ecosystem

	Encourage discussion within groups about the different relationships they identified and the overall web of life within the chosen ecosystem. Introduce the concept of a habitat as the specific place where an organism lives and finds its basic needs. Compare and contrast habitats with ecosystems, emphasizing the narrower focus on a specific organism's niche. Show pictures of different organisms and their corresponding habitats (e.g., a coral fish in a reef, a penguin on ice). Play a "Habitat Hideout" game where learners act as different organisms and race to find their corresponding habitat picture based on clues about their needs and adaptations. Discuss the diversity of habitats and their importance in providing suitable conditions for different organisms to thrive. Provide learners with the worksheet containing pictures and descriptions of different ecosystems. Challenge them to identify the organisms, their interactions, and the key characteristics of each ecosystem. Have learners answer questions on the worksheet about interdependence, food webs, and potential threats to these ecosystems. Encourage group discussion and collaboration to analyze the information and understand the complex dynamics within each ecosystem <u>Assessment</u> Divide learners into groups and assign each group a different ecosystem they studied. Provide them with materials like construction paper, markers, and yarn to create a large collaborative mural of their assigned ecosystem. Challenge them to include diverse organisms, their interactions, and important features of the habitat. Allow time for creative expression and group teamwork to showcase their understanding of ecosystems and interdependence.	construction paper, yarn, markers, etc.

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.	

Week Ending:	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Systems	
Class: B9	**Class Size:**	**Sub Strand:** Ecosystem	
Content Standard: B9.3.3.1 Recognize the interdependence of organisms in an ecosystem and appreciate their interaction to maintain balance in the system	**Indicator:** B9.3.3.1.1 Conduct research into the composition of an ecosystem and discuss how the components depend on each other for survival.		**Lesson:** 1 of 1
Performance Indicator: Learners can analyze and predict the impacts of various types of interference on ecosystem balance and understand the importance of maintaining the delicate balance in ecosystems for sustainable life.		**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation	
References: Science Curriculum Pg. 104			
Key words:			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin by asking learners what they know about food chains and how organisms depend on each other for food. Introduce the concept of an ecosystem as a web of interconnected food chains and explain the role of producers, consumers, and decomposers. Show pictures of different ecosystems and mention specific examples of food chains within each.	

	Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Choose a specific ecosystem relevant to your location or learners' interest (e.g., a tropical rainforest, a coral reef, a grassland). Divide learners into small groups and provide them with food chain and food web templates. Challenge each group to research and construct a simple food chain within their assigned ecosystem, identifying producers, consumers, and decomposers. Encourage them to connect multiple food chains into a complex food web, illustrating the interconnectedness of organisms and energy flow. Have groups share their created food chains and webs, discussing the relationships between organisms and the overall ecosystem balance. Introduce the concept of ecosystem balance and its importance for the survival of all living organisms. Present the list of potential interferences (earthquake, volcanic eruptions, hunting, farming, mining, "galamsey," pollution, pesticides, bush burning). Divide the class into small groups and assign each group a specific interference. Provide them with the worksheet containing questions about the potential impacts of their assigned interference on different components of the chosen ecosystem and its overall balance. Challenge learners to analyze the impacts on producers, consumers, decomposers, food chains, and the web as a whole. Encourage group discussion and collaborative analysis to predict the consequences and potential long-term effects on the ecosystem. <u>Assessment</u> Organize a debate on the topic: "Development vs. Conservation: Striking a Balance for a Sustainable Future."	Pictures or diagrams of different ecosystems (forests, oceans, etc.) Food chain and food web templates List of potential ecosystem interferences (earthquake, volcanic eruptions, hunting, farming, mining, "galamsey," pollution, pesticides, bush burning)
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 8

Week Ending:	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Forces & Energy	
Class: B9	**Class Size:**	**Sub Strand:** Electricity and Electronics	
Content Standard: B9.4.2.1 Construct electrical circuits and illustrate how electrical energy is transformed into other forms of energy and perform electrical calculations	**Indicator:** B9.4.2.1.1 Demonstrate transformation of electrical energy to other forms of energy in both series and parallel circuits and perform simple calculations involving the flow of current in circuits/.	**Lesson:** 1 of 2	
Performance Indicator: Learners can describe the impact of changes in electrical circuits on the output of bulbs and describe how electrical energy transformation occurs in series and parallel circuits		**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation	
References: Science Curriculum Pg. 109			
Key words: Electrical circuits, Voltage, Current, Resistance, Series circuits			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a simple demonstration of a basic electrical circuit involving a bulb, battery, and wires. Ask students to observe and discuss what happens when different changes are made to the circuit, such as adding more bulbs, changing the resistance, or altering the arrangement. Encourage predictions about the impact on the output of bulbs. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: electrical circuits, voltage, current, resistance, series circuits, parallel circuits. Discuss the flow of electrical energy in a circuit and introduce the concept of energy transformation. Present diagrams of series and parallel circuits on the whiteboard. Discuss how the arrangement of components affects the output in terms of brightness and energy distribution.	Bulbs, batteries, wires, resistors Multimeters Diagrams of series and parallel circuits

	Conduct a hands-on activity where students construct simple electrical circuits with different configurations, measure voltage, current, and resistance using multimeters, and observe the impact on the bulbs. Discuss the observations, emphasizing the differences between series and parallel circuits and the concept of energy transformation. Conduct a short discussion on real-life applications of series and parallel circuits, connecting the lesson content to practical scenarios such as household wiring or electronic devices. Guide learners to calculate the potential difference in a circuit using the formula: V = IR (where I is the current and R the resistance) Example 1: If the current (I) in a circuit is 2 Amperes and the resistance (R) is 5 Ohms, what is the potential difference (V)? <u>Solution</u> Current (I): 2 Amperes Resistance (R): 5 Ohms V=IR V=(2A)×(5Ω) V=10Volts Example 2: In a different circuit, the current (I) is 3 Amperes, and the resistance (R) is 8 Ohms. Calculate the potential difference (V) in this circuit. <u>Solution</u> Current (I): 3 Amperes Resistance (R): 8 Ohms V=IR V=(3A)×(8Ω) V=24Volts Example 3: For a circuit with a current (I) of 1.5 Amperes and a resistance (R) of 6 Ohms, determine the potential difference (V). <u>Solution</u> Current (I): 1.5 Amperes Resistance (R): 6 Ohms V=IR V=(1.5A)×(6Ω) V=9Volts	

	Example 4: If the current (I) in a particular circuit is 4 Amperes, and the resistance (R) is 10 Ohms, what is the potential difference (V)? <u>Solution</u> Current (I): 4 Amperes Resistance (R): 10 Ohms V=IR V=(4A)×(10Ω) V=40Volts <u>Assessment</u> 1. What happens to the brightness of bulbs if the voltage in a circuit increases? 2. How does adding more bulbs to a series circuit affect the current reaching each bulb? 3. What type of energy transformation happens inside a battery? 4. Why do bulbs in a parallel circuit shine brighter than those in a series circuit with the same voltage? 5. If the current (I) in a circuit is 2 Amperes and the resistance (R) is 5 Ohms, what is the potential difference (V)? 6. For a circuit with a current (I) of 1.5 Amperes and a resistance (R) of 6 Ohms, determine the potential difference (V).	
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.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Forces & Energy
Class: B9	**Class Size:**	**Sub Strand:** Electricity and Electronics

Content Standard: B9.4.2.2 Demonstrate an understanding of Forward and Reverse Bias and explain the behavior of LEDs, Diodes, Resistors and Capacitors in electronic circuits	**Indicator:** B9.4.2.2.1 Describe forward bias and reverse bias and explain the relationship among the components, such as: LEDs, Diodes, Resistors and Capacitors, in an electronic circuit.	**Lesson:** 1 of 2

Performance Indicator: Learners can explain forward bias and reverse bias in an electronic circuit	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 109

Key words: LED (Light Emitting Diode), Resistors, Capacitors, Electronic circuits

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson by showing a basic electronic circuit with an LED, battery, and resistor on the whiteboard. Ask students if they have any prior knowledge about the behavior of LEDs in circuits. Encourage a short discussion to activate their existing knowledge. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: forward bias, reverse bias. Explain the concept of forward bias, where the voltage across the LED allows current to flow, causing it to emit light. Discuss reverse bias, where the voltage across the LED prevents current flow, resulting in the LED being off. Provide each student/group with a breadboard, LED, resistor, and battery. Instruct students to construct a simple circuit with the LED in forward bias and observe the LED's behavior. Have them modify the circuit to create reverse bias and note the changes in LED behavior. Discuss findings as a class.	LEDs Resistors (varying values) Capacitors Breadboards Jumper wires Batteries Switches

	Introduce resistors and capacitors to the class, explaining their roles in electronic circuits. Provide various resistors and capacitors for students to experiment with. Instruct students to construct different circuits involving resistors and capacitors and observe the effects on the LED. Discuss findings as a class. <u>Assessment</u> 1. In which bias does an LED light up? 2. What does a resistor do in a basic LED circuit? 3. How does connecting LEDs in parallel affect their brightness compared to a series connection? 4. What happens to the LED when connected in reverse bias?	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 9

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Forces & Energy
Class: B9	**Class Size:**	**Sub Strand:** Conversion & Conservation Of Energy

Content Standard: B9.4.3.1 Show an understanding of conversion and conservation of energy and their application to life.	**Indicator:** B9.4.3.1.1 Describe how energy can be converted from one form to another and show how conservation of energy occurs.	**Lesson:** 1 of 2

Performance Indicator: Learners can differentiate between the conversion and conservation of energy and understand their applications in daily life.	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 109

Key words: Energy, Energy conversion, Energy conservation

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a simple question: "What is energy?" Encourage learners to share their definitions and examples of energy. Write their responses on the board. Then, introduce the terms "energy conversion" and "energy conservation." Ask if anyone can provide examples or definitions for these terms. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: energy conversion, energy conservation. Explain that energy conversion involves changing one form of energy into another, while energy conservation involves the preservation of total energy within a system. Provide brief examples of each concept, such as a light bulb converting electrical energy into light energy (conversion) and a swinging pendulum conserving its mechanical energy (conservation). Divide the class into small groups. Provide each group with images or descriptions of different energy conversion processes (e.g., a car engine, a solar panel, a wind turbine).	Visual aids or diagrams depicting energy conversion and conservation

	Instruct learners to identify and discuss the various forms of energy involved in each process. Each group presents their findings to the class, fostering a collective understanding of energy conversion. Introduce real-life scenarios or case studies where energy conservation is crucial (e.g., home insulation, hybrid vehicles). Assign different scenarios to each group and have them discuss how energy is conserved in those situations. Each group shares their insights with the class, highlighting the importance of energy conservation in daily life. <u>Assessment</u> 1. What happens to the form of energy when a leaf falls from a tree? 2. How does using energy-efficient appliances at home contribute to energy conservation? 3. Explain why a solar panel is an example of energy conversion. 4. Describe one way understanding energy principles can help you make healthier choices.	
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.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Forces & Energy
Class: B9	**Class Size:**	**Sub Strand:** Conversion & Conservation Of Energy

Content Standard: B9.4.3.1 Show an understanding of conversion and conservation of energy and their application to life.	**Indicator:** B9.4.3.1.2 Describe how conversion and conservation of energy are applied in life.	**Lesson:** 1 of 2

Performance Indicator: Learners can distinguish between energy conversion and conservation using everyday examples	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation
References: Science Curriculum Pg. 109	
Key words:	

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a brief discussion about the different forms of energy learners encounter in their daily lives. Ask them to share examples of energy conversion and conservation that they may have observed. Write these examples on the board. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: energy conversion, energy conservation. Briefly explain the distinctions between energy conversion (changing from one form to another) and energy conservation (preserving total energy within a system). Provide clear examples of each concept, using visuals or real-life scenarios. Divide the class into small groups. Provide each group with a list of everyday scenarios or objects (e.g., a cellphone charging, a car moving, a refrigerator running). Instruct learners to discuss and categorize each scenario as an example of energy conversion, conservation, or both. Each group shares their findings with the class, fostering discussion and clarifying any misconceptions.	Pictures and charts

	Assign learners the task of identifying opportunities to conserve energy in their homes, schools, or communities. Instruct them to observe and document instances where energy can be conserved (e.g., turning off lights, using energy-efficient appliances). Each student produces a short report summarizing their findings, including suggestions for energy conservation. <u>Assessment</u> 1. What happens to the energy when you throw a ball in the air and catch it? 2. How does turning off lights help conserve energy? 3. Explain why using a bike instead of a car is an example of both energy conservation and conversion. 4. Describe one opportunity to conserve energy in your daily routine.	
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.	

SECOND TERM
WEEKLY LESSON NOTES
WEEK 10

Week Ending:	**DAY:**	**Subject:** Science	
Duration: 100mins		**Strand:** Humans & the Environment	
Class: B9	**Class Size:**	**Sub Strand:** Waste management	
Content Standard: B9.5.1.1 Demonstrate an understanding of the scientific ways of waste management	**Indicator:** B9.5.1.1.1 Investigate the scientific methods used in waste management.		**Lesson:** 1 of 2
Performance Indicator: Learners can identify scientific methods such as recycling and composting used in waste management	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation		
References: Science Curriculum Pg. 109			
Key words: Waste management, Recycling, Composting, Scientific methods			

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a brief discussion about waste management. Ask learners what comes to mind when they think about waste and how it is managed in their school or community. Write down their responses on the board. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: waste management, recycling, composting. Briefly explain the importance of effective waste management for environmental sustainability. Introduce the focus of the lesson: identifying scientific methods in waste management and understanding the scientific principles behind them. Divide the class into small groups. Provide each group with information about specific waste management methods (recycling, composting, etc.). Instruct learners to identify the scientific principles behind each method and how they contribute to waste reduction. Each group presents their findings to the class, fostering a collective understanding of scientific methods in waste management.	Visual aids or diagrams depicting waste management methods Real-life examples or case studies of waste management practices

	Engage the class in a discussion about the scientific principles behind various waste management methods. Discuss topics such as decomposition, material transformation, and resource recovery. Use visual aids to enhance understanding and clarify any misconceptions. <u>Assessment</u> 1. What scientific principle allows plastic bottles to be recycled into new clothing? 2. How does adding water and turning compost piles help accelerate decomposition? 3. Why is it important to properly sort different materials during recycling? 4. What is one way your school could reduce the amount of waste it generates?	
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.	

Week Ending:	**DAY:**	**Subject:** Science
Duration: 100mins		**Strand:** Humans & the Environment
Class: B9	**Class Size:**	**Sub Strand:** Waste management

Content Standard: B9.5.1.2. Demonstrate an understanding of the impact of waste on an environment, innovative waste management technologies for sustainable development and waste management practices in Ghana	**Indicator:** B9.5.1.2.1 Describe innovative ways of waste management for sustainable development.	**Lesson:** 1 of 2

Performance Indicator: Learners can explain the impact of waste on the environment, identify innovative ways to manage waste for sustainable development	**Core Competencies:** Critical Thinking and Problem Solving (CP), Communication and Collaboration (CC) Digital Literacy (DL), Creativity and Innovation

References: Science Curriculum Pg. 109

Key words: Plastic pollution, Upcycling, Waste-to-energy

Phase/Duration	Learners Activities	Resources
PHASE 1: **STARTER**	Begin the lesson with a thought-provoking question: "What do you think happens to the waste produced in your community, and how might it affect the environment?" Allow learners to share their thoughts and ideas. Write down key points on the board. Share learning indicators and introduce the lesson.	
PHASE 2: **NEW LEARNING**	Define key terms: waste impact, sustainable development, innovative waste management. Provide an overview of the lesson's objectives and the importance of addressing waste issues for sustainable development. Discuss the environmental impact of different types of waste, such as plastic pollution, air pollution from burning waste, and soil contamination. Use visual aids to illustrate the consequences of improper waste disposal. Encourage learners to think critically about the long-term effects on ecosystems and human health. Divide the class into small groups.	Visual aids or infographics on waste impact Examples of innovative waste management practices Information on types of waste in Ghana

	Provide examples of innovative waste management practices (e.g., upcycling, waste-to-energy projects, community recycling initiatives). Instruct each group to research and present an innovative method, discussing its environmental benefits and challenges. Assign each student or group a specific type of waste commonly produced in Ghana (e.g., plastic waste, electronic waste). Learners research the characteristics, sources, and impacts of their assigned waste type. Present findings to the class, fostering a comprehensive understanding of waste in the local context. <u>Assessment</u> 1. How does plastic waste pollution in Ghana's water bodies affect marine life? 2. What environmental benefit does converting organic waste into biogas offer? 3. Briefly explain why e-waste is a particular challenge for Ghana's waste management system. 4. What is one action individuals can take in their communities to improve waste management practices?	
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.	