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| **Learning Planner** | | | | | | | | |
| **Subject** | *General science* | **Week** | | *9* | **Duration** | *180 mins* | **Form** | *SHS 1* |
| **Strand** | PROCESSES FOR LIVING | **Sub-Strand** | | ESSENTIALS FOR SURVIVAL | | | | |
| **Content Standard** | Demonstrate understanding, appreciation and model the movement of substances in biotic and abiotic media | | | | | | | |
| **Learning Outcome(s)** | Appreciate the movement of substances in biotic and abiotic media. | | | | | | | |
| **Learning**  **Indicator(s)** | Design, model and explain the process of osmosis and indicate its application to everyday life. | | | | | | | |
| **Essential Question(s)** | What are some of the examples of Osmosis in biological systems?  How can the principle of Osmosis be applied in the preservation of food substances?  What materials will be needed to demonstrate the principle of Osmosis in daily life? | | | | | | | |
| **Pedagogical Strategies** | * Collaborative learning * Demonstration/ activity-based learning approach * Talk-for-learning approaches * Research method | | | | | | | |
| **Teaching & Learning Resources** | * Video Clips/2. Internet resources such as (<https://www.youtube.com/watch?v=jhszFBtBPoI>; <https://www.youtube.com/watch?v=JnIkGtkO-Js>) * Potassium Permanganate crystals, * Table salt/sugar, Water, Bowl, etc. * Cellophane or any suitable substance available. * Yam tissue, potato tissue or any suitable substance available. | | | | | | | |
| **Key Notes on Differentiation** | | | | | | | | |
| 1. Learning task  * Explain the concept osmosis * Describe how osmosis is applied in everyday life * Design an experiment to investigate osmosis. etc.  1. Pedagogical exemplars  * Research and Discussion   + Put learners into pairs and assign them the task of researching osmosis from books/internet/science journals etc. Facilitate student research on osmosis through guiding questions and reliable sources   + Encourage discussions on the meaning and significance of osmosis based on their findings   + Facilitate a whole-class discussion to consolidate key points and address any queries   + Encourage participation and collaboration among students, ensuring diverse perspectives are valued. * Activity-based learning/ Collaborative learning   + Put learners in mixed-ability groups and guide them in designing an experiment to investigate osmosis   + Provide support and resources for students to plan and execute their experiments   + Encourage students to document their experimental procedures, observations, and results   + Organize mixed-sex and mixed-ability groups to prepare presentations on the practical applications of osmosis. Offer feedback and evaluation of student presentations to reinforce learning outcomes.   + Emphasize the involvement of female students in key roles during the presentation   + Encourage discussions on how osmosis is utilized in everyday scenarios like cooking, plant hydration, or medical processes. etc.  1. Key Assessments (DoK):  * Level 2: Explain three factors that affect osmosis * Level 2: Describe three ways osmosis can be applied in the domestic setting * Level 3: Design a model to explain the process of osmosis and report on it. etc. | | | | | | | | |
| **Keywords** | Equilibrium, permeable, semi-permeable membrane, passive, etc. | | | | | | | |
| ***Lesson 1***  ***Osmosis and its application in our daily life.*** | | | | | | | | |
| ***Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual*** | | | | | | | | |
| ***Teacher Activity*** | | | ***Learner Activity*** | | | | | |
| ***Starter Activity (10 minutes)***  ***Teacher:Ask learners to receite the poem ‘My head my shoulder, my knee my toes.***  ***Learner: Learners receite the poem.*** | | | | | | | | |
| ***Introductory Activity (10minutes)***  *Put learners in mixed group and mixed ability groups.*  ***Activity 1 (40 minutes)***  *Ask learners to search the internet to find out the concept of Osmosis in their mixed ability groups*  ***Activity 2 (40 minutes)***  *In their mixed groups demonstrate to learners the concept of Osmosi*  ***Activity 3 (30 minutes)***  *I Ask learners to search the internet and find out the the meaning of concentration gradient and semi-pemeable membrane and*  *II Ask learners to discuss the findings in their mixed groups.*  ***Activity 4 (20 minutes)***  *Ask learners to brainstorm the factors that affect Osmosis in their mixed group. Ask learners to share their findings with their group members* | | | ***Introductory Activity***  *Learners seated in their mixed group and mixed ability groups.*  ***Activity 1***  *Learners search the internet and find out the concept of Osmosis*  ***Activity 2***  *Learner observe the demonstration of the concept of Osmosis*  ***Activity 3***  ***I Learners search the internet to find*** *out the meaning of concentration gradient and semi-pemeable membrane.*  *II Learners discuss the findings in their mixed groups* ***the*** *application of Osmosis in everyday life.*  ***Activity 4***  *learners brainstorm the factors that affect Osmosis and share their findings with their group members* | | | | | |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | | | | | | | | |
| Level 2: Explain three factors that affect Osmosis | | | | | | | | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | | | | | | | | |
| ***Activity (15 minutes)***  *Using Pass-that-question, ask learners to write any question on the lesson.*  *Teacher Summarize the lesson highlighting the salient points* | | | | | | | | |
| **Reflection & Remarks** | | | | | | | | |
| *Reflection*  *Remarks* | | | | | | | | |
| **Lesson 2**  **Osmosis and its application in our daily life.** | | | | | | | | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | | | | | | | | |
| ***Teacher Activity*** | | | ***Learner Activity*** | | | | | |
| **Starter *Activity (10 minutes)***  ***Teacher: ask learners to write down the definition of Osmosis on a paper and pass it on to the person sitting next to them.***  ***Learners write down the definition of Osmosis and pass it on to the next person in the class*** | | | | | | | | |
| ***Introductory activity (25 minutes)***  *I Put learners into mixed ability and mixed gender group.*  *II Ask learners to discuss among themselves areas they think the principle of Osmosis can be applied in their mixed groups.*  ***Activity 1 (25 minutes)***  *Lead learners to identify specific areas in life where the principle of Osmosis is applicable in their mixed ability groups.*  ***Activity 2 (25 minutes)***  *Ask learners to discuss how the principle of Osmosis is applied in plants in their mixed gender and mixed ability groups.*  ***Activity 3 (25 minutes)***  *Ask learners to discuss how the principle of Osmosis is applied in animals in their mixed gender and mixed ability groups.* | | | ***Introductory activity***  *I Learners seated in their mixed ability and mixed gender groups.*  *II learners discuss among themselves areas in life that they think the principle of Osmosis can be applied.*    ***Activity 1***  *Learners identify specific areas in life where the principle of Osmosis is applicable.*  ***Activity 2***  *learners discuss how the principle of Osmosis is used in plants*  ***Activity 3 (25 minutes)***  *learners discuss how the principle of Osmosis is used in animals* | | | | | |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | | | | | | | | |
| Level 4: How is the principle of Osmosis demonstrated in the preservation of dry fish (Koobi)? | | | | | | | | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | | | | | | | | |
| ***Activity (15 minutes)***  *Using Pass-that-question, ask learners to write any question on the lesson.*  *Ssummarize the lesson highlighting the salient points* | | | | | | | | |
| **Reflection & Remarks** | | | | | | | | |
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