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| **Learning Planner** |
| **Subject** | *General science* | **Week** | *8* | **Duration** | *180 min* | **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)** | Explain the concept of diffusion and its application in life. |
| **Essential Question(s)**  | How does diffusion influences the behavior of gas in physics and cellular processes in biology.What are the applications of diffusion in everyday lifeWhat materials are needed for the demonstration of diffusion. |
| **Pedagogical Strategies** | * *Collaborative learning*
* *Demonstration/ activity-based learning approach*
* Talk-for-learning approaches
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| **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>)
* Liquid perfume in a container with a lid.
* Potassium Permanganate crystals
* Camphor.
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| **Key Notes on Differentiation** |
| 1. Learning Tasks:
* Explain diffusion in everyday life
* Give at least three examples of diffusion in everyday life
* How does temperature affect the rate of diffusion?
* How does diffusion play a role in biological systems? etc.
1. Pedagogical Exemplars:
* Using collaborative learning, Group learners based on mixed-ability and gender to encourage collaborative learning. Assign roles within each group to ensure equitable participation
* Introduce the concept of diffusion and explain its use in domains such as chemistry, biology, and physics
* Give each group a transparent container/beaker half-filled with water and potassium permanganate crystals
* Let learners drop potassium permanganate crystals into the beaker containing water and observe what happens. Ensure all learners actively participate in the activity and support learners with difficulties
* Ask learners to reflect and cross share their findings for discussion through peer review
* Encourage groups to use the think-pair-share strategy to explain the diffusion process, etc.

 1. Key Assessments (DoK)
* Level 2: How does temperature affect the rate of diffusion?
* Level 3: How does the molecular weight of particles influence the diffusion rate?
* Level 4: In a lab experiment, two identical containers are filled with water, and a drop of ink is added to each container. Container A is kept at room temperature while Container B is placed in a refrigerator. Predict and explain the difference in the diffusion rate between the two containers, etc.
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| **Keywords** | Diffuse, fragrance, *gradient, concentration, etc* |
| **Lesson 1****Concepts of diffusion and its application in 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 National pledge******Learners: Receite the National pledge*** |
| ***Introductory Activity (15minutes)****Lead learners to discuss keywords* ***Activity 1 (20 minutes)*** *Spray a sented perfume at one corner of the classroom and noted what they observe.****Activity 2 (40 minutes)****Put leaners in their mixed ability group and gender groups. Disribute the materials for each group**Expalin to learners the use of the materials for demonstrating diffusion.**Activity 3(40minutes)**I. Lead learners to demonstrate the process of diffusion of Potassium Permanganate in their mixed ability groups.**II.. Ask learners to note down their observation from the demonstration**Activity 4(e.g. 30minutes)**Ask learners to present their observations from the demonstration in their mixed groups.* | ***Introductory Activity****Learners note down the keywords* ***Activity 1*** *Learners narrate their experience of the perfume in the classroom.****Activity 2 (40 minutes)****Learners observe the mateials needed in demonstrating diffusion*Activity 3I..Learners demonstrate the process of diffusion using potassium permanganate.Activity 4Learners presented their observations from the demonstration of diffusion. |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** |
| ***Level 3:*** How does the molecular weight of particles influence the diffusion rate? |
| **Lesson Closure** ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** |
| ***Activity (15 minutes)*** *Using the inside –outside circle, learners share what they learned from the lesson with their colleagues. Offering opportunitites for clarification and correction.**Using the exit card ask learners to write down activities of science they learn.**Assign activities for the next lesson:**Ask learners to write down activities they perform at home/dormitory and the characteristics of science they applied.* |
| **Reflection & Remarks** |
| *Reflection**Remarks:* *Lesson was successful* |
| **Lesson 2****Concepts of diffusion and its application in 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 metion the five sense organs of the body and state their functions**Learners: Named the the sense organs and their corresponding function.* |
| ***Introductory activity (20 minutes)****Put learners in mixed ability groups and give each group a bottle of sented perfume****Activity 1 (25 minutes)******In their mixed ability groups ask learners to brainstorm about Diffusion in gas******Activity 2 (25 minutes)****Show video of diffusion in gas to learners.****Activity 3 (25 minutes)****Ask learners to demonstrate the process of diffusion in gas using the bottle of permume provided in their mixed ability and mixed gender group.****Activity 4****Ask learners to search from the internet the factors that affect Diffusion* | ***Introductory activity****Learners seated in the mixed ability groups with their bottle of perfume****Activity 1(30 minutes)****Learners brainstorm about diffusion in gas in their groups****Activity 2 (25 minutes)******Learners watch video of the process of diffision in gas******Activity 3 (25 minutes)****Learners demonstrate the process of diffusion in gas using the bottle of permume provided in their mixed ability and mixed gender group* *Activity 4**Learners search and noted the factors that affect Diffusion* |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** |
| **Level 1: identify 3 uses of diffusion in**1. **Plants**
2. **Animals**

**Level 2:**  |
| **Lesson Closure** ***In completing this part, refer to the Essential Questions to check that learning has taken place.***  |
| ***Activity (15 minutes)*** *Using the inside –outside circle, learners share what they learned from the lesson with their colleagues. Offering opportunitites for clarification and correction.**Using the exit card ask learners to write down how the principle of Diffusion is applied in our daily life.* |
| **Reflection & Remarks** |
| *Reflection:**Remarks:* |