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| **Learning Plan** | | | | | | | |
| **Subject** | *Biology* | **Week** | *1* | **Duration** | *60 minutes* | **Form** | *1* |
| **Strand** | *Exploring Biology in the Society1* | **Sub-Strand** | *Biology as the Science of life* | | | | |
| **Content Standard** | *Demonstrate knowledge and understanding of Biology, the various branches and fields of study, and their benefits in everyday life* | | | | | | |
| **Learning Outcome(s)** | *Explain the importance of Biology and its branches and relate this to everyday life.* | | | | | | |
| **Learning**  **Indicator(s)** | *a) Observe and discuss the importance of Biology, its various branches and their applications in everyday life.*  *b) Explain the importance of Biology, its various branches and their applications in everyday life*  *c) Explain the importance of Biology, its various branches and their applications in everyday life* | | | | | | |
| **Essential Question(s)** | *Lesson 1*   1. *How would you apply the relevance of Biology in your everyday life and why?* 2. *What would you do to improve upon food production as one of the importance of biology?* 3. *What pedagogical strategies can I employ to help learners to understand the importance of biology in everyday life?*   *Lesson 2*   1. *How would you use the knowledge of different fields of biology to select different professions in biology?* 2. *How can you relate the knowledge of the branches of biology to the production of some common items and products we use in our everyday life? (e.g., honey, dried fish/ “Koobi”, bottled fruit juice, any antibiotic drug, lab coat, body cream, soap, bread, kenkey, palm wine, leather shoes and bags, etc.,)* 3. *Which teaching and learning resources can I use to help learners to identify the various branches of biology?* | | | | | | |
| **Pedagogical Strategies** | *Collaborative learning, Talk for Learning (TFL), Think-pair-share, Inquiry-Based Learning* | | | | | | |
| **Teaching & Learning Resources** | *Honey, dried fish/ “Koobi”, bottled fruit juice, any antibiotic drug, lab coat, body cream, soap, bread, kenkey, palm wine, leather shoes and bags, etc., or their pictures if these materials are not readily available*  *laptop, smartphone, USB drive, CD of video of biologists at work, Textbooks, Scientific journals, Professionals in the various fields of biology.* | | | | | | |
| **Key Notes on Differentiation** | | | | | | | |
| *Learning Tasks:*   1. *Explain the term Biology. Limit content expectation to the definition of Biology.* 2. *Describe at least four ways in which the knowledge of Biology is useful in everyday life. Extend content expectation to the discussion /explanation of how useful the knowledge of Biology is in the following areas of food production, gardening, home hygiene, human, animal, and plant health as well as conservation of natural resources.* 3. *Discuss the importance of Biology in the production of Honey, Dried fish/ “Koobi”, and bottled fruit juice. Extend content response to the importance of Biology in the following areas Honey production, Dried fish/’Koobi ‘and bottled juice.*   *Pedagogical Exemplars:*   1. *Collaborative Learning: learners in mixed ability, gender-balanced groups, observe pictures and videos of specimens relating to Biology (e.g., honey and dry Tilapia, etc.) and share ideas with peers and accept feedback.* 2. *Learners in mixed-ability groups learn from each other and provide emotional support to one another to achieve targets.* 3. *Talk-For Learning: Learners in pairs discuss, analyse and share the contribution of biologists in the development of society; learners learn from each other and improve upon their communication skills. Communication and Collaboration: Learners speak politely and clearly as they share ideas on the video and pictures they watched with their peers and accept constructive feedback from their peers*   *Key Assessments (DoK):*   1. *Level 1: What is Biology? Accept oral/written responses for different definitions of biology.* 2. *Level 2: How is the knowledge of Biology applied in everyday life? Accept oral/written explanations for four ways the knowledge of Biology is applied in everyday life.* 3. *Level 3: Discuss the importance of Biology in the production of Honey, Dry fish/ “Kobi” and bottled fruit juice. Accept oral/written discussion on the importance of Biology in Honey, Dried fish/koobi and fruit juice production.* 4. *Level 4: Describe briefly how you will use the knowledge gained in Biology to reclaim degraded land. Accept oral /written responses for four ways a degraded land can be reclaimed using knowledge gained in Biology* | | | | | | | |
| **Keywords** | *Botany, Zoology, Microbiology, Mycology, Parasitology, Cytology, Histology, Entomology, Ecology, etc.* | | | | | | |

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| **Lesson 1** | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | |
| ***Teacher Activity*** | ***Learner Activity*** |
| **Starter *Activity (5 minutes)***  *Introduce lesson by showing learners some items related to Biology such as, plants, fish, lab coat, honey, dried fish/ “Koobi”, bottled fruit juice, any antibiotic drug, lab coat, body cream, soap, bread, kenkey, palm wine, leather shoes and bags, etc., and ask learners to individually identify each and write what they know about these items.* | |
| ***Introductory Activity (10minutes)***  *Put learners in mixed-ability, gender-balanced groups, and ask learners to share ideas on what they recollect and know about the items shown in the starter activity. Encourage learners to show respect for individuals diverse views as they interact and collaborate in their groups*    ***Activity 1 (20 minutes)***  *Ask learners to pair within their groups to brainstorm and respond to what they recollect and know about the items shown in starter activity.*  ***Activity 2 (20 minutes)***  *Ask learners to use available resources (e.g. Textbooks, the internet, library, etc.) to research branches of Biology and their importance.*  *The teacher provides the rubrics for the presentation to guide learners prepare their written group reports for the presentation* | ***Introductory Activity (10minutes)***  *Learners share ideas about items presented to them and discuss these materials in their groups. Learners show respect for one another’s views they interact and collaborate in their groups*  ***Activity 1 (20 minutes)***  *In pairs learners recollect and discuss what they know about the items shown in the starter activity*  ***Activity 2 (20 minutes)***  *Learners make use of available resources (e.g. Textbooks, the internet, library, etc.) to research further, branches of Biology and their importance. Learners prepare written group reports for presentation within the given time.* |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | | |
| *Level 1: Recall:*  *List at least five branches of biology*  *Level 2: Skills of conceptual understanding;*  *Summarise your understanding of the term Biology.*  *Level 3: Strategic Thinking*  *Considering the items given, explain 5 to 8 ways the knowledge of Biology is applied in everyday life.*  *Level 3: Strategic Thinking*  *Cite evidence on how can Biology is linked to other fields of study.* | | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | | |
| ***Activity (5 minutes)***   1. *Ask each group to present a concept map of the focal point of each activity as a summary of the lesson* 2. *Assign an activity for the fields of work related to biology* | | |
| **Reflection & Remarks (After the lesson)** | | |
| 1. *What was my best moment in the lesson?* 2. *Did I managed and control my class well?* 3. *What will I do differently?* 4. *What did the learners find difficult to understand?* 5. *What activities did the learners complete with ease and on time?* 6. *Did I pay particular attention to learners with special educational needs (SEN)?* | | |
| **Lesson 2** | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | |
| ***Teacher Activity*** | ***Learner Activity*** |
| **Starter *Activity (5 minutes)***  *Learners watch a short video/ pictures of scientists at work in different branches relating to biology and randomly call learners to predict the main theme/focal point of the lesson.* | |
| ***Introductory activity (10 minutes)***  *Put learners in mixed-ability, gender-balanced groups, and ask them to link the various branches of biology they can identify in the picture of the various units in a hospital. Encourage learners to support one another as they collaborate in their groups.*    ***Activity 1 (20 minutes)***  *Put learners in mixed-ability, gender-balanced groups, and ask them to discuss and link the various branches of biology they can identify in the various units in a named community.*    ***Activity 2 (20 minutes)***  *Ask learners to individually write down at least 10 fields of science where the knowledge of biology is applied and explain how the knowledge of biology is applied in any 5 of the fields listed.* | ***Introductory activity (10 minutes)***  *Learners discuss in their groups and link the various branches of biology they identify in the various units of the hospital in the picture provided. Learners support one another as they collaborate in their groups*    ***Activity 1(20 minutes)***  *Discuss in their groups and link the various branches of biology they identify in the various units in their community*  ***Activity 2 (20 minutes)***  *Learners individually write down at least 10 fields of science where the knowledge of biology is applied and explain how the knowledge of biology is applied in any 5 of the fields listed.* |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | | |
| *Level 2: Skills of conceptual understanding;*  *What are the various branches in Biology and their everyday application?*  *Level 3: Strategic thinking*  *Describe the importance of 5 to 8 branches mentioned*  *Level 3: Strategic thinking*  *Which branch of Biology is linked to the mode of transmission and treatment of diseases?* | | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | | |
| ***Activity (5 minutes)***   1. *Draw learner’s attention to the end of the lesson.* 2. *Ask each group to present a concept map approach as a summary of the focal point of each lesson.* 3. *Provide feedback to learners.* 4. *Assign an activity for the next lesson.* | | |
| **Reflection & Remarks (After the lesson)** | | |
| 1. *What was my best moment in the lesson?* 2. *Did I manage and control my class well?* 3. *What will I do differently?* 4. *What did the learners find difficult to understand?* 5. *What activities did the learners complete with ease and on time?* 6. *Did I pay particular attention to learners with special educational needs (SEN)?* | | |

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| **Learning Planner** | | | | | | | |
| **Subject** | *Biology* | **Week** | *2* | **Duration** | *60 minutes* | **Form** | *1* |
| **Strand** | *Exploring Biology in the Society* | **Sub-Strand** | *Biology as the Science of life* | | | | |
| **Content Standard** | *Understand and apply the method through which biologists work to solve problems.* | | | | | | |
| **Learning Outcome(s)** | *Solve everyday problems using the scientific method.* | | | | | | |
| **Learning**  **Indicator(s)** | *Explain how the scientific method is used to solve problems in the immediate environment* | | | | | | |
| **Essential Question(s)** | *Lesson 1*  *Lesson 2*  *Lesson 3* | | | | | | |
| **Pedagogical Strategies** | *Research Base Learning, Group Presentation, Individual Base Learning* | | | | | | |
| **Teaching & Learning Resources** | *Computer/Projectors/TV/Smart phone, Flow chart, Photos/Pictures, Textbooks, Flyers, Flip charts papers, etc.* | | | | | | |
| **Key Notes on Differentiation** | | | | | | | |
| *Learning Tasks:*   1. *Explain the scientific method. Limit content to telling what the scientific method is about (learner not expected to mention and explain steps at this stage).* 2. *Examine the importance of using the scientific steps in solving problems. Learners are expected to discuss the important roles the scientific method plays in solving problems.* 3. *Briefly explain inductive reasoning and deductive reasoning as used by biologists in applying the scientific method to solve problems. Limit content to briefly defining and explaining inductive and deductive reasoning abilities, and how these approaches are used in the scientific method to solve practical problems in daily life.* 4. *Give examples of inductive reasoning and deductive reasoning methods in Biology. Each learner should give at least one example of each of the inductive and deductive thinking methods.*   *Pedagogical Exemplars:*   1. *Learners in mixed-ability, research-based learning, research to understand the basis on which the scientific method is built, and how it is employed in solving problems in the school environment and community at large. Learners learn to be team players in groups research activities, and feel valued in contributing to lessons.* 2. *Learners in research group presentations, identify and explain some common problems in the environment, and the processes leading to the identification of these problems. By this, learners become critical thinkers and observers.* 3. *Learners employ individual-based learning methods to individually research, problem identification and try to independently identify some common problems. They develop individual learning capabilities,*   *Key Assessments (DoK):*   1. *Level 1: By which technique do biologists and other scientists solve problems identified in their environment? Learners are to give a simple answer, which is the scientific method.* 2. *Level 2: Explain why the biology learner should learn to use the scientific method in solving problems encountered in everyday life. Each learner is expected to explain at least three importance of the scientific method and explain why the learner should use them in solving problems.* 3. *Level 3: Describe the two methods of thinking associated with the use of the scientific method, and give one example of each. Learners are to provide clear descriptions of inductive and deductive thinking and give at least an example for each.* 4. *Level 4: Create a typical scenario that uses inductive and deductive reasoning abilities, and relate these to the scientific method. Learners are free to think of hypothetical instances where inductive and deductive learning are applied and discuss this in the light of the scientific method.* | | | | | | | |
| **Keywords** | *Scientific Method, Observation, Hypothesis, Experimentation, Analysis, Dependent and Independent Variables, Control Experiment etc.* | | | | | | |

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| **Lesson 1** | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | |
| ***Teacher Activity*** | ***Learner Activity*** |
| **Starter *Activity (5minutes)*** | |
| ***Introductory Activity (10minutes)***      ***Activity 1 (20 minutes)***  *I.*  ***Activity 2 (20 minutes)*** | ***Introductory Activity (10minutes)***      ***Activity 1 (20 minutes)***  ***Activity 2 (20 minutes)*** |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | |
| ***Level 3*** | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | |
| ***Activity (5 minutes)*** | |
| **Reflection & Remarks** | |
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| **Lesson 2** | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | |
| ***Teacher Activity*** | ***Learner Activity*** |
| **Starter *Activity (5 minutes)*** | |
| ***Introductory activity (10 minutes)***      ***Activity 1 (20 minutes)***      ***Activity 2 (20 minutes)***      ***Activity 3 (XX minutes)*** | ***Introductory activity (10 minutes)***    ***Activity 1(20 minutes)***      ***Activity 2 (20 minutes)***  ***Activity 3 (XX minutes)*** |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | |
| ***Level 3***  *1.* | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | |
| ***Activity (5 minutes)*** | |
| **Reflection & Remarks** | |
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| **Lesson 3** | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | |
| ***Teacher Activity*** | ***Learner Activity*** |
| **Starter *Activity (5minutes)*** | |
| ***Introductory Activity (10minutes)***      ***Activity 1 (20 minutes)***  ***Activity 2 (20 minutes)*** | ***Introductory Activity (10minutes)***      ***Activity 1 (20 minutes)***  ***Activity 2 (20 minutes)*** |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | |
| ***Level 3*** | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | |
| ***Activity (5 minutes)*** | |
| **Reflection & Remarks** | |
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