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| **Learning Planner** | | | | | | | |
| **Subject** | *Chemistry* | **Week** | *1* | **Duration** |  | **Form** | *1* |
| **Strand** | *Physical chemistry* | **Sub-Strand** | *Matter and its properties* | | | | |
| **Content Standard** | *Demonstrate understanding of the scientific practices in chemistry using relevant acquired skills to solve problems as well as explaining the structure of the atom and its stability* | | | | | | |
| **Learning Outcome(s)** | *Use the knowledge and understanding of the scientific practices in chemistry to explain the structure of the atom as well as the stability of its nucleus* | | | | | | |
| **Learning**  **Indicator(s)** | *Describe chemical processes around us and their applications in everyday life*  *Discuss and explain safety rules and hazard symbols in the laboratory.* | | | | | | |
| **Essential Question(s)** |  | | | | | | |
| **Pedagogical Strategies** | *Digital learning, Talk-for-Life Learning, Collaboration and Communication* | | | | | | |
| **Teaching & Learning Resources** | *Videos, slides, pictures, charts, projector, labelled cards, computer or laptop. Household items with labels, Chemical containers with labels, Personal protective equipment (eye goggle, laboratory coat/apron, hand gloves), Flammable materials, Oxidizing materials, Hazard symbols, Prohibition signs.* | | | | | | |
| **Key Notes on Differentiation** | | | | | | | |
| *Learning Tasks:*  *1. Discuss and distinguish between the traditional branches of chemistry.*  *2. Discuss the centrality of chemistry as a science discipline which is related to other science subjects.*  *3. Draw flowcharts and pictures to summarize ways in which chemistry affects daily lives under the following headings: (Food and nutrition, Agriculture, Medicine, Transportation, Energy, etc.)*  *Pedagogical Exemplars:*  *Digital learning:*  *a. Divide learners into mixed ability groups and show them video or slide/pictures on variety of natural and artificial phenomena that can be explained by chemistry. Visually impaired learners should be considered and alternative plans made for them.*  *b. Guide learners to discuss and distinguish among the traditional branches of chemistry. Ask questions and encourage all learners to talk in the group.*  *c. Using mixed ability groups, guide learners to draw flowcharts and pictures to summarize ways in which chemistry affects daily lives under the following headings: (Food and nutrition, Agriculture, Medicine, Transportation, Energy, etc.)*  *Visually impaired learners should be considered and alternative plans made for them.* | | | | | | | |
| **Keywords** | *Physical chemistry, applied chemistry, hazards, personal protective equipment* | | | | | | |

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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 (10 minutes)*** | |
| ***Introductory Activity (15minutes)***      ***Activity 1 (40 minutes)***  ***Activity 2 (40 minutes)*** | ***Introductory Activity (15minutes)***      ***Activity 1 (40 minutes)***  ***Activity 2 (40 minutes)*** |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | |
| *Level 1:*   1. *With clicker questions, define Chemistry.*   *Level 2:*   1. *Distinguish between pure and applied chemistry.* | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | |
| ***Activity (15 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 (10 minutes)*** | |
| ***Introductory activity (25 minutes)***      ***Activity 1 (25 minutes)***      ***Activity 2 (25 minutes)***      ***Activity 3 (25 minutes)*** | ***Introductory activity (25 minutes)***    ***Activity 1(30 minutes)***      ***Activity 2 (25 minutes)***  ***Activity 3 (25 minutes)*** |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | |
| *Level 1:*   1. *With clicker questions, give two (2) examples of personal protective equipment used in the chemistry laboratory.*   *Level 2:*   1. *With safety procedure processes explain why it isk not advisable to start a car in a closed garage?*   *Level 3:*   1. *Mercury is a heavy metal used in illegal mining (galamsey) of gold in water bodies. It was accidentally released into a river body. In presentations, what are the possible implications on the health of the people in the community.* | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | |
| ***Activity (15 minutes)*** | |
| **Reflection & Remarks** | |
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| **Learning Planner** | | | | | | | |
| **Subject** | *Chemistry* | **Week** | *2* | **Duration** |  | **Form** | *1* |
| **Strand** | *Physical chemistry* | **Sub-Strand** | *Matter and its properties* | | | | |
| **Content Standard** | *Demonstrate understanding of the scientific practices in chemistry using relevant acquired skills to solve problems as well as explaining the structure of the atom and its stability* | | | | | | |
| **Learning Outcome(s)** | *Use the knowledge and understanding of the scientific practices in chemistry to explain the structure of the atom as well as the stability of its nucleus* | | | | | | |
| **Learning**  **Indicator(s)** | *Explain why chemicals should be stored by compatibility and not alphabetically in the laboratory.*  *Investigate the scientific method of inquiry.* | | | | | | |
| **Essential Question(s)** |  | | | | | | |
| **Pedagogical Strategies** | *Exploratory learning, Digital learning* | | | | | | |
| **Teaching & Learning Resources** | *Videos, slides, projector, computer or laptop, Oxidizing materials, flammable materials, fire extinguisher, fire blanket, material for setting fire, Potassium permanganate, glycerol.* | | | | | | |
| **Key Notes on Differentiation** | | | | | | | |
| *Learning Tasks:*  *1. List at least two key rules to follow when storing chemicals in the laboratory.*  *2. State at least two reasons why chemicals should be stored by compatibility method and not in alphabetical order.*  *3. Explain how to extinguish small fires in the laboratory using:*  *a. Fire blanket*  *b. Fire extinguisher*  *Pedagogical Exemplars (with the cross-cutting themes integrated)*  *1. Exploratory Learning / Collaborative Learning*  *a. Using field trip as a strategy, support learners to visit the school chemical store or chemistry laboratory to observe how chemicals are stored.*  *b. In mixed ability groups ask learners to explain why chemicals should be stored by compatibility and not alphabetically in the laboratory.*  *c. Show a video to learners on a violent reaction between chemicals as a result of them being stored right next to each other (e.g., hydrogen peroxide and hydrazine, or, oxidising materials and flammable materials, acetic acid and nitric acid or reaction between potassium permanganate and glycerol). Lead a whole class discussion related to the key concepts demonstrated in the video.*  *d. Use think-pair-share approach to lead discuss on how to put out small fire using fire blanket and fire extinguisher.*  *e. Guide learners in pairs to demonstrate how to put out small fire using fire blanket and fire extinguisher.*  *NB: Take all the necessary precautions to prevent accidents and burns. Make provision for first aid. Also, be mindful of learners who may be allergic to smoke.*  *Learning Task*  *1. List at least five steps involved in the scientific method of enquiry.*  *2. Discuss at least three steps involved in the scientific method of enquiry.*  *3. a. Describe how to apply the steps in the scientific methods of enquiry to solve a problem*  *in the school environment or nearby community.*  *b. Design a poster outlining the scientific methods of enquiry to be used in solving the problem and share with the class for discussion.*  *Pedagogical Exemplars (with the cross-cutting themes integrated)*  *Inquiry-Based Learning:*  *1. In mixed - ability groupings learners discuss at least five steps involved in the scientific method of enquiry.*  *2. In ability groupings guide learners to apply the steps in the scientific methods of enquiry to solve a problem in the school environment or nearby community.*  *3. In ability groupings support learners to design a poster outlining the method used and share with the class for discussion.* | | | | | | | |
| **Keywords** | *Flammable materials, chemical assay, oxidizing materials* | | | | | | |

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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 (10 minutes)*** | |
| ***Introductory Activity (15minutes)***      ***Activity 1 (40 minutes)***  ***Activity 2 (40 minutes)*** | ***Introductory Activity (15minutes)***      ***Activity 1 (40 minutes)***  ***Activity 2 (40 minutes)*** |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | |
| *Level 1: State at least one (1) type of fire that can be extinguished using a carbon dioxide fire extinguisher.*  *Level 2: Explain why potassium permanganate should not be stored near a bottle containing ethanol.*  *Level 3: Design a chemical storage compatibility chart using the following chemicals in the laboratory: HCl, HNO3, CH3COOH, NaOH, H2O2, CH3CH2OH.* | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | |
| ***Activity (15 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 (10 minutes)*** | |
| ***Introductory activity (25 minutes)***      ***Activity 1 (25 minutes)***      ***Activity 2 (25 minutes)***      ***Activity 3 (25 minutes)*** | ***Introductory activity (25 minutes)***    ***Activity 1(30 minutes)***      ***Activity 2 (25 minutes)***  ***Activity 3 (25 minutes)*** |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | |
| ***Level 1:***   1. ***Outline at least five steps involved in the scientific method of enquiry.***   *Level 2:*   1. *Identify at least a problem in the school environment that can be solved using the scientific method of enquiry.*   *Level 3:*   1. *Formulate a hypothesis to drive the investigation for at least one of the problems identified.*   *Level 4:*   1. *Design an experiment that can be used to solve the problem(s) identified.* | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | |
| ***Activity (15 minutes)*** | |
| **Reflection & Remarks** | |
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