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| **Learning Planner** | | | | | | | | | |
| **Subject** | *General science* | **Week** | | *6* | **Duration** | *180 min* | **Form** | *SHS 1* | |
| **Strand** | *EXPLORING MATERIALS* | **Sub-Strand** | | SCIENCE AND MATERIALS IN NATURE | | | | | |
| **Content Standard** | Know, understand, and identify the roles of solids in life | | | | | | | | |
| **Learning Outcome(s)** | Explain the functions of solids in life. | | | | | | | | |
| **Learning**  **Indicator(s)** | Discuss the relationship between binary compounds, the composition of binary compounds and the names of compounds. | | | | | | | | |
| **Essential Question(s)** | What rules governed the formation of binary compounds?  How are binary ionic compounds different from covalent birnary compunds?  What materials will be needed to demonstrate to learners binary compounds*?* | | | | | | | | |
| **Pedagogical Strategies** | * Collaborative learning * Research method * Demonstration * Talk-for-learning approaches | | | | | | | | |
| **Teaching & Learning Resources** | * Internet resources such as Massive Open Online Courses (MOOCs); (<https://www.youtube.com/watch?v=N4MdZx1fgbA>; <https://www.youtube.com/watch?v=ZcF8E8aAOGs>; <https://www.youtube.com/watch?v=vTq4sgGd2QU>) * Projectors * Charts * Pictures of Binary compounds, * Equations and reaction equations * Books and Journals. * Videos on the relationship between binary compounds, chemical equations, and names of compounds * Models | | | | | | | | |
| **Key Notes on Differentiation** | | | | | | | | | |
| 1. Learning Tasks:  * Explain the chemical composition of a binary compound * Give an example and explain the bonding of ionic compound * Explain how the chemical formulae for binary compounds can be written, etc.  1. Pedagogical Exemplars:  * Guide learners to revise from the JHS curriculum B9.1.1.1.1 about the nature of compounds. Provide opportunities for students to practice respecting others using the talk-for-learning strategies * Using models, videos, charts, and the internet, learners discuss the relationship between binary compounds (such as CO₂ NO₂, etc.), their composition, and chemical equations * With the help of visuals, define each term: element, molecule, ion, and compound * Have learners categorise a list of chemical examples such as H2O, NaCl, Fe, Ca 2+ under the correct headings: element, molecule, ion, or compound. Review and clarify misconceptions * Explain what binary compounds are, focusing on their formation * Use a Venn diagram or a chart, modelling kits or craft materials like coloured balls (for atoms) and sticks or Molymod (for bonds). Learners working in pairs can compare the properties of different binary chemical compounds, such as solubility, conductivity, and melting point * Engage learners in small group discussions about why certain compounds share properties and some differ vastly, etc.  1. Key Assessments (DoK):  * Level 1: Identify at least four examples of binary compounds * Level 2 - Describe how magnesium oxide is formed * Level 3: Explain the role of electron transfer in the formation of binary ionic compounds * Level 3: Explain how covalent compounds are different from ionic compounds. Give precise examples to support your explanation, etc. | | | | | | | | | |
| **Keywords** | Solubility, binary, composition, compund etc | | | | | | | | |
| **Lesson 1**  **Relationship Between Binary Compounds, the Composition of Binary Compounds and the Names of Compounds.** | | | | | | | | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | | | | | | | | |
| ***Teacher Activity*** | | | ***Learner Activity*** | | | | | |
| **Starter *Activity (10 minutes)***  ***Ack learners to receite the first –twenty elements in the Periodic Table***  ***Learners receite the first twenty elements in the periodic table*** | | | | | | | | |
| ***Introductory Activity (15minutes)***  *Put learners in mixed groups mixed gender groups. Ask to write five elements and their chemical symbols and share their answers with their friends in their groups*  ***Activity 1 (20 minutes)***  *Write some binary compunds on the board (e.g.* H2O, NaCl, MgO, CaCl*) Ask learners to identify the individual elements in the the binary compounds in the mixed groups.*  ***Activity 2***  *ask learners to search the internet and write down ten binary compounds in their mixed groups and gender groups*  ***Activity 3 (40 minutes)***  *Using a chart demonstrate how binary ionic compounds e.g. MgO is formed in their mixed groups.* | | | ***Introductory Activity (15minutes)***  *Learners share their ansers with their members in groups*  ***Activity 2 (40 minutes)***  *Learners in their groups identify the individual lements in the written binary compounds*  *Activity 2*  *Learners search the internet and note down ten binary compounds.*  *Activity 3*  *Learners note down who binary ionic comounds are formed* | | | | | |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | | | | | | | | | |
| Level 1: Recall,   * : Identify at least four examples of binary compounds.   Level 2 - Describe how magnesium oxide is formed | | | | | | | | | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | | | | | | | | | |
| ***Activity (15 minutes)***  *Using think pair share ask learners to demonstrate in their mixed group how the binary compound NaCl is formed.* | | | | | | | | | |
| **Reflection & Remarks** | | | | | | | | | |
| *Reflection:*  *Remarks:* | | | | | | | | | |
| **Lesson 2**  **Relationship Between Binary Compounds, the Composition of Binary Compounds and the Names of Compounds.** | | | | | | | | |
| **Main Lesson drawing on Concepts, Skills and Competencies to reinforce as in the Subject Teacher Manual** | | | | | | | | |
| ***Teacher Activity*** | | | ***Learner Activity*** | | | | | |
| **Starter**  ***Activity (10 minutes)***  *Put learners in their mixed groups and mixed gender groups,*  *Ask learners in their mixed ability-groups to write the chemical symbols of five elements in the Periodic Table*  ***Learners:***  *In their mixed ability-groups, write the chemical symbols of five elements in the Periodic Table* | | | | | | | | |
| ***Introductory activity (25 minutes)***  *Ask each mixed group to name five binary compound*  ***Activity 1 (25 minutes)***  *Ask learners to search the internet and note down the meaning of covalent compounds in their mixed groups*  ***Activity 2 (15 minutes)***  *Ask learners to write down five covalent compounds from the internet in the mixed gender groups*  ***Activity 3 (25 minutes)***  *Demosntrate to learners how binary covalent compounds are formed in their mixed groups* | | | ***Introductory activity***  *Learners from each group metion the five binary compound their identified identified*    ***Activity 1(30 minutes)***  *Learners search the internet and note down the meaning of covalent compounds.*  ***Activity 2***  *Learners in their groups preneted the five covalent compound they identified on the internet*  ***Activity 3 (25 minutes)***  *Note down how binary covalent compounds are formed* | | | | | |
| **Assessment DoK aligned to the Curriculum and Subject Teacher Manual** | | | | | | | | | |
| Level 1: Recall  Name five binary covalent compound  Level 2:  Explain how the binary compound Cl2 is formed. | | | | | | | | | |
| **Lesson Closure**  ***In completing this part, refer to the Essential Questions to check that learning has taken place.*** | | | | | | | | | |
| ***Activity (15 minutes)***  *Using think pair ask learners to discuss among themselves the difference between ionic and covalent binary compounds* | | | | | | | | | |
| **Reflection & Remarks** | | | | | | | | | |
| *Reflections*  *Remarks*  *Lesson was successful* | | | | | | | | | |