**LESSON PLAN FOR WEEK ONE (PART TWO) ENDING FRIDAY 13TH SEPTEMBER, 2024**

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| Date | 09/09/2024 |
| Class | JSS 3 |
| Average Age | 12 years |
| Duration | 80 minutes |
| Subject | Basic Technology |
| Topic | Gears and motion |
| Specific Objectives | At the end of the lesson the students should be able to:   * Demonstrate gearing system * Calculate the speed of gears * Calculating gear ratios * Changing the direction of drives in gears * Sketch the gearing arrangement of a reverse gear |
| Instructional Resources | A mobile phone, laptop, air-conditioner, cars, etc. |

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| STEPS | TEACHER’S ACTIVITIES | LEARNERS’ ACTIVITIES | MODE |
| Step 1 – Identification of Prior Ideas | The teacher draws the attention of the students to the fact that in engineering, there is always need to transmit energy or motion from one shaft to another. Gears are used to achieve this purpose. | Listen with rapt attention. | Entire class |
| Step 2 – Exploration | The teacher guides the students to look round the environment and identify various vehicles that work by means of gears. | Observe and take note of various vehicles that work by means of gears. | Entire class |
| Step 3 - Discussion | The teacher explains the steps involved in demonstrating gearing.  **Demonstrating gearing**  **Steps**  1. Take two bottle caps that have rounded edges (coke and pepsi bottle cover)  2. Place them on a flat surface so that the teeth of one is labeled A mesh into the groves of the other one labeled B as shown below;  3. Hold A down lightly with a finger of your left and rotate B with the right hand. Do it carefully so that B rotates about A.  4. Draw the bottle cap in the mesh and indicate the direction of motion/movement of both A and B.  State your observations and identify which of the cap that is the driver and the driven.  In the process of rotating the caps, you observe that there is a sliding and pushing action. This is a common feature of any gear system. Therefore, adequate lubrication is required to reduce friction, heat and wear and tear.  C:\Users\CHUKWU CHIZOBA\AppData\Local\Microsoft\Windows\INetCache\Content.Word\IMG_20230905_180239_8.jpg  **Changing the direction of drives in gears**  Change in direction of movement in machines cannot be avoided. For example, cars, tricycles and trains move in reverse direction in situations like parking and pulling out of tight spaces. The change in the direction is made possible by gear arrangements that result in reverse movement. For instance, if the drive and reverse gear systems are engaged at the same time, the driving shaft rotates in the reverse direction. Hence, the vehicle moves backwards. The below diagram shows the typical arrangement of gears which results in change in direction of drive.  C:\Users\CHUKWU CHIZOBA\AppData\Local\Microsoft\Windows\INetCache\Content.Word\IMG_20230908_042413_9.jpg | Participate in class discussion | Entire class |
| Step 4 - Application | The teacher asks the students to mention where gear mechanisms are used/applied. | The learners respond to the teacher’s questions. | Entire class |
| Step 5 – Evaluation | The teacher asks the students the following questions:   * Demonstrate gearing system * Calculate the speed of gears * Calculating gear ratios * Changing the direction of drives in gears * Sketch the gearing arrangement of a reverse gear | Respond to the teacher’s questions | Entire class |

ASSIGNMENT**:** The number of teeth on the driver and the driven gear is 12 and 16 respectively. If the speed of the driver gear is 100rpm.

Calculate: i. The gear ratio (ii) Speed of the driven gear

REFERENCES: Evans Basic Technology for JSS Book 1, by Elekwa I. et al (2009)

Basic Technology for JSS Book 1, by Adedokun S. A. (2016)