**LESSON DEVELOPMENT THREE**

**EFFECTS OF FRICTION – ADVANTAGES AND DISADVANTAGES OF FRICTION**

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| **STAGE/TIME** | **TEACHER’S ACTIVITIES** | **LEARNER'S ACTIVITIES – MIND/HANDS ON** | **LEARNING POINTS** |
| **Step 1**  **Introduction – Introductory Activities**  **(5 minutes)** | Asks pupils –  What is the first thing you do when you feel cold?  Why do you rub your hands?  ***Friction generates heat.*** | Cover yourself with a blanket or you ***rub your hands*** against each other to feel warm.  To get warm by generating heat. | Linking the Previous knowledge to the new lesson |
| **Step 2**  **Development**  **(5 minutes)**  **Grouping** | 1. Groups the learners into four groups – A, B, C, and D.  2. Guide the learners to choose a leader and secretary for your group.  3. Gives each group learning materials – load, bucket of water, detergents, etc. | 1. Belong to a group.  2. Choose their leader and secretary.  3. Received learning materials for their group. | Learner’s group, leader and secretary confirmed. |
| **Step 3**  **Development – Groups Activities**  **(10 minutes)** | Takes all groups to the field.  ***Asks them to –***  1. Choose a member to represent your group for a short distance race. ***Moderates pupils race activities.***  2. Choose another member to run the same race with a load.  ***Compare the 1st runners with the 2nd runners. Who runs faster or slower? State the reasons.***  3. Mixed a detergent with a bucket of water. Pour it on the smooth floor to become slippery.  ***4. What happens when walk bear footed or with boot?***  4.  ***Explain why some machines make noise when not grease or oil.*** | Each group chooses their representatives.  1st runners run with ease while the 2nd runners can’t run faster because of the load they carried.  Get fall or slippery on slippery floor without boot. Walk better on slippery floor with boot.  This is because there is a force preventing the machine from working smoothly. After greasing, they work with little or no noise. | Ways of reducing friction. |
| **Step 4**  **Development – Groups Presentation**  **(10 minutes)** | Asks each group to present their results/solutions so that you can compare responses with those in other groups. | **Presentation – Call on any member of at least two pairs in each to make presentation to the class.** | Group Presentation |
| **Step 5**  **Conclusion**  **(10 minutes)** | To conclude the lesson, the teacher revises the entire lesson and ask the key questions.  **SUMMARY –**  The more load you carry, the less you walk or run faster. With boot we are able to walk on slippery. When machine are grease or oil, it works well.  The reasons why we can’t walk faster when carrying loads, walk better with boot or why machine makes noise are all because of the effects of friction. | The learners listen, ask and answer questions.  **KEY QUESTIONS –**  ***What are the effects of friction –***  1. It reduces energy or power.  2. It produces noise.  3. It enables us to walk.  4. It generate heat. | Lesson Evaluation and Conclusion |

***Reference book – Primary 4, 5 & 6 Basic Science & Technology***