

Rail Safety - Lesson Plans

Activity 4 – Power Jump

Curriculum for Excellence Experiences and Outcomes

I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units. **MNU 1-11a**

1. Connecting the Learning - Begin by reminding learners that electricity can 'jump' and ask the class if anyone can remember how far? (3metres) Discuss what implications this can have for the safety of people playing on or near railways. Emphasise again that you don't have to touch the overhead lines on an electric railway to be electrocuted. If you fly a kite or dangle things from bridges near the overhead power lines, the electricity can arc like lightening or jump up to 3 meters. Explain that in this lesson, learners will work collaboratively to compare different heights with how far electricity can 'jump'.

2. Sharing the Learning Outcomes -

- I can use a tape measure or measuring stick to measure and record the height my partner jumps.
- I can compare the height of our jumps with other things that are tall or that can jump high.
- I can create a bar graph to illustrate my findings.

3. Active Learning - Distribute Worksheet 4 'The Power Jump' to pairs or small groups of learners. Working together, one person holds up the tape measure or measuring stick and their partner jumps as high as they can. Each person then writes down their name and how high they jumped on the worksheet. Learners can then compare the height of each jump with other things that are tall or that can jump high. As an extension activity, learners can complete the final part of the worksheet which asks them to consider how much electricity three different objects use.

4. Demonstrating Understanding - After sufficient time has been given for learners to record their jumps, invite groups to share their findings to the rest of the class. Ask learners to draw comparisons between just how far electricity can 'jump' and their jumps, the world high jump record (2.45m) and the height of an average man (1.753m). Using graph or squared paper, learners could create bar graphs to illustrate their findings. Give learners an opportunity to share their bar graphs with each other and with you. Ask learners for feedback on which of the three objects at the bottom of their worksheet they thought used the most and least electricity. Encourage learners to justify their opinions and then share the correct answers with them (found at the bottom of the page).

5. Review and Recall - Repeat the Learning Outcomes and ask learners to show you 'thumbs' if they achieved each one (thumbs up if they did and thumbs down if they didn't). Inform learners that even the lowest voltage overhead lines can produce 10,000 times more current than is required to kill a person. Touch electricity lines or objects or people in contact with the lines can be fatal. Trees, string ropes and water can all conduct electricity. Lines that are damaged or on the ground may still be live and dangerous. Create a wall display of learners' bar graphs with pupil-made 'facts' around the perimeter of the display i.e. Electricity can jump further than the height of an average man,' etc.