Renew-A-Bean Activity

Objective: To encourage students to reflect on energy sources and energy use.

What to Expect: An eye-opening, hands-on activity to teach students about the value of renewable energy.

Materials:

- 150 Red Beads or Beans or Paperclips
- 60 Green Beads or Beans or Paperclips
- Opaque bag or basket
- Optional – graphing materials

Instructions:

Assemble 2 colours of beads/beans/paperclips and the opaque bag or basket to represent the renewable (green) and non-renewable (red) energy we have in the world.

Arrange the learners in a circle. Each learner will take a single turn and the activity will go around the circle. Be prepared to track the beads/beans/paperclips from each turn.

On each turn, learners will close their eyes and draw beads from the bag (or what ever you have chosen). The beads a learner takes take represent the amount of energy used by the global population in one decade.

1) **Round 1.** Fill the bag with only red beads, which represent non-renewable energy. The first learner will close their eyes and draw 5 beads from the bag. To represent population growth, the next person will draw 6 beads. Each person should draw one more bead than the person before them. Continue around the group drawing beads until no beads remain in the bag. How many "decades" did the energy last?

2) **Round 2.** Replace 20% of the red beads with green beads (renewable energy). Repeat what you did with bag #1 (1st person draws 5 beads, 2nd person draws 6 etc.), except that this time, if a green bead is drawn, it is returned to the bag before the next person draws. Continue until no red beads re-main in the bag. How many "decades" did the energy last this time?

3) **Round 3.** This time, let your students design their own bead bag with its own rules. Keeping the same total amount of beads, allow them to replace up to 40% of red beads with green beads (40% was the 2020 ratio goal of renewables in Nova Scotia). They can also choose the amount of beads drawn each turn (as long as it is more than 4 beads/turn) or, even decide if they will continue to keep their eyes closed while drawing beads. Continue until no red beads remain in the bag. How many decades did the energy last this time? Ask the students why they made their rule changes and what those changes might represent in real life.

Take home message: Education, energy conservation, and the development and prioritization of renewable energies can preserve the energy supply for future generations and can help extend the availability of non-renewables for the things that are still currently reliant on it.

Extension Activity: Graph the results of Steps 1 through 3, giving a visual representation of the changing energy use.

For more renewable energy activities and resources, head to www.clean.ns.ca/experience.

CURRICULUM OUTCOME CONNECTIONS

The Skilled Futures Virtual Experience has been confirmed with representatives from the Department of Education & Early Childhood Development to connect with the following curriculum outcomes:

Mathematics 8

- Students will be expected to solve problems that involve rates, ratios, and proportional reasoning
- Students will be expected to graph and analyze two variable linear relations
- Students will be expected to critique ways in which data is presented

Mathematics 9

- Students will be expected to graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems
- Students will be expected to develop and implement a project plan for the collection, display, and analysis of data by collecting the data and displaying the collected data in an appropriate manner

Science 8

- Learners will evaluate the impact of human activity on climate change.

Technology Education 7

- Work independently, co-operatively, and collaboratively to solve technological problems
- Demonstrate an awareness of ethics and environmental responsibility in technological decision-making and work habits