

Nova Scotia Alternative Energies Curriculum Connections

Grade 6-8 Science

Science Grade 6

Learners will test the flow of electrical energy through various materials.

Physical Science: Electricity

Rationale

An exploration of how electricity works will help students recognize the need for safe practices when around electricity. Learners will investigate various materials and their ability to conduct electricity. The testing of series and parallel circuits allows for the refinement of scientific processes and permits the comparison of a variety of circuit pathways. From this, learners will be able to design solutions to electrical problems by completing various circuits and circuit drawings.

Competencies

- Communication (COM)
- Personal Career Development (PCD)
- Creativity and Innovation (CI)
- Critical Thinking (CT)
- Technological Fluency (TF)

Indicators

- **Investigate** static electricity (COM, CT, TF)
- **Investigate** materials that conduct electricity (COM, CT, TF)
- **Test** series and parallel circuits for movement of electric current (COM, CI, CT, TF)
- **Analyse** circuit drawings for effectiveness (COM, PCD, CT, TF)
- **Compare** how series and parallel circuits are used (COM, PCD, CT, TF)
- **Investigate** the relationship between electricity and magnetism (COM, CT, TF)

Concepts (and Guiding Questions)

Static Electricity

- How can static charge be generated?
- How does the static electricity in our clothes compare to the electricity that runs our computers?

Conductors and insulators

- How does conduction or insulation vary in different materials?
- How are conductors and insulators used in electrical devices?

Electric currents move through series and parallel circuits

- How does electricity move?
- How is the direction of the flow of electricity similar in series and parallel circuits? How is it different?
- How does a switch affect a circuit?
- How do differences in the circuit pathways affect the strength of the electrical current?

Using series and parallel circuits in everyday life

- How are series circuits used in everyday life?
- How are parallel circuits used in everyday life?

Circuit drawings

- How can circuits be represented for others to interpret?
- How can I tell if a circuit drawing would conduct electricity?

Electric currents have magnetic fields

- How can magnetic field be generated by an electric current?
- How are magnetically generated electric currents used?

Skills

Test

Formulate a testable question; Hypothesize a reasonable result; Identify possible variables and intentionally control variables; Design and conduct an experiment; Collect, record, and analyze evidence; Draw conclusions based on evidence; Communicate findings; Predict the results of a similar experiment and justify the prediction; Evaluate limitations and improvements.

Investigate

Ask and revise questions; locate several relevant and dependable details to support an answer; organize and compare details; identify relationships; recognize represented perspectives, and communicate findings.

Analyse

Gather and select appropriate information. Begin to reflect on accuracy, validity, and, importance, of the information. Communicate findings.

Compare

Make observations; identify similarities and differences; identify relationships and offer an interpretation; reflect on the findings.