

Electricity All Around Us Curriculum Connections

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Activity: Electron Flow

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.1 Recognize and appreciate the potential dangers involved in using sources of electrical currents: Household currents are dangerous; small batteries are relatively safe; short circuits can heat up wires and drain batteries.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Lighting a Light Bulb

Alberta

- ❖ Grade 5 Science: Mechanisms Using Electricity
 - SLE 5-6.2 Students will design and construct circuits that operate lights and other electrical devices.
- ❖ Grade 6 Science: Skills

- Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
- Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
- Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Conductors and Insulators

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - 5-5.5 Distinguish electrical conductors materials that allow electricity to flow through them from insulators materials that do not allow electricity to flow through them.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.

- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Liquid Conductors and Insulators

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - 5-5.4 Demonstrate that a continuous loop of conducting material is needed for an uninterrupted flow of current in a circuit.
 - 5-5.5 Distinguish between electrical conductor materials that allow electricity to flow through them and insulator materials that do not allow electricity to flow through them.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.
- ❖ Grade 8 Science: Mix and Flow of Matter

- STS 1 Investigate and describe fluids used in technological devices and everyday materials.
- STS 2 Investigate and describe the composition of fluids, and interpret the behaviour of materials in solution.
- STS 4 Identify, interpret and apply technologies based on properties of fluids.
- ❖ Grade 8 Science: Skill Outcomes
 - Initiating and Planning: Ask questions about the relationships between and among observable variables, and plan investigations to address those questions.
 - Performing and Recording: Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data.
 - Analyzing and Interpreting: Analyze qualitative and quantitative data, and develop and assess possible explanations.
 - Communication and Teamwork: Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results.

Activity: Power Lines

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.1 Students will recognize and appreciate the potential dangers involved in using sources of electrical currents: Household currents are dangerous; small batteries are relatively safe; short circuits can heat up wires and drain batteries.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.

- Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
- Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Visualizing Electromagnetism

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.2 Students will describe and demonstrate example activities that show that electricity and magnetism are related: electromagnets and electrical induction.
 - SLE 5-5.3 Students will demonstrate and interpret evidence of magnetic fields around magnets and around current-carrying wires using iron filings or magnetic compasses.
 - SLE 5-5.4 Students will demonstrate that a continuous loop of conducting material is needed for an uninterrupted flow of current in a circuit.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.

- Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Demonstrating Magnetism

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.2 Students will describe and demonstrate example activities that show that electricity and magnetism are related: electromagnets; electrical induction.
 - SLE 5-5.3 Students will demonstrate and interpret evidence of magnetic fields around magnets and around current-carrying wires using iron filings or magnetic compasses.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes

- 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Building a Simple Ammeter

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.2 Students will describe and demonstrate example activities that show that electricity and magnetism are related: electromagnets; electrical induction.
 - SLE 5-5.3 Students will demonstrate and interpret evidence of magnetic fields around magnets and around current-carrying wires using iron filings or magnetic compasses.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Making and Testing Electromagnets

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.3 Students will demonstrate and interpret evidence of magnetic fields around magnets and around current-carrying wires using iron filings or magnetic compasses.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Demonstrating Electrical Induction

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.2 Students will describe and demonstrate example activities that show that electricity and magnetism are related: electromagnets; electrical induction.
- ❖ Grade 6 Science: Skills

- Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
- Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
- Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Virtual Circuits

Alberta

- ❖ Grade 5 Science: Electricity and Magnetism
 - SLE 5-5.10 Students will draw and interpret, with guidance, circuit diagrams that include symbols for switches, power sources, resistors, lights, and motors.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.

- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Building Parallel and Series Circuits

Alberta

- ❖ Grade 5 Science: Mechanisms Using Electricity
 - SLE 5-6.7 Students will demonstrate different ways of lighting two lights from a single power source, and compare the results. Students should recognize that wiring two bulbs in series makes both bulbs glow less brightly than if the bulbs are wired in parallel.
 - SLE 5-6.8 Students will demonstrate different ways of using two batteries to light a bulb, and compare the results. Students should recognize that wiring the batteries in series causes the bulb to glow brighter than it would if parallel wiring were used.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Switches

Alberta

- ❖ Grade 5 Science: Mechanisms Using Electricity
 - SLE 5-6.4 Students will construct and use a variety of switches.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
 - Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.

Activity: Burglar Alarm

Alberta

- ❖ Grade 5 Science: Mechanisms Using Electricity
 - SLE 5-6.4 Students will construct and use a variety of switches.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.

- Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.
- Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.
- ❖ Grade 8 Science: Mechanical Systems
 - STS 4 Analyze the social and environmental contexts of science and technology, as they apply to the development of mechanical devices.

Activity: Making Fuses

Alberta

- ❖ Grade 5 Science: Mechanisms Using Electricity
 - SLE 5-6.3 Students will recognize the importance of switches and other control mechanisms to the design and operation of electrical devices, and identify purposes of switches in particular.
 - SLE 5-6.9 Students will, given a task and appropriate materials, invent and construct an electrical device that meets the task requirements.
- ❖ Grade 6 Science: Skills
 - Science Inquiry: 6-1 Design and carry out an investigation in which variables are identified and controlled, and that provides a fair test of the question being investigated.
 - Science Inquiry: 6-2 Recognize the importance of accuracy in observation and measurement; and apply suitable methods to record, compile, interpret and evaluate observations and measurements.

- Problem Solving through Technology: 6-3 Design and carry out an investigation of a practical problem, and develop a possible solution.
- ❖ Grade 6 Science: Attitudes
 - 6.4 Demonstrate positive attitudes for the study of science and for the application of science in responsible ways.
- ❖ Grade 8 Science: Mechanical Systems
 - STS 4 Analyze the social and environmental contexts of science and technology, as they apply to the development of mechanical devices.