

MAKE AN ELECTROMAGNET

Lesson Summary:

Students work together to make an electromagnet by creating a circuit using 6-volt batteries. Students pick up paper clips as a result of the magnetic field created around the wires carrying an electric current.

Objectives:

The student will:

- create an electric current that produces an invisible magnetic field;
- observe the invisible magnetic field generated around an electric current can behave like a magnet and attract objects, such as paper clips;
- determine that increasing the voltage supply increases the strength of an electromagnet; and
- conclude that increasing coils of wire around a nail increases the strength of an electromagnet.

GLEs Addressed:

Science

- [5] SA1.2 The student demonstrates an understanding of the processes of science by using quantitative and qualitative observations to create inferences and predictions.
- [6] SA1.2 The student demonstrates an understanding of the processes of science by collaborating to design and conduct simple repeatable investigations.
- [7] SA1.2 The student demonstrates an understanding of the processes of science by collaborating to design and conduct simple repeatable investigations, in order to record, analyze (i.e., range, mean, median, mode), interpret data, and present findings.
- [8] SA1.2 The student demonstrates an understanding of the processes of science by collaborating to design and conduct repeatable investigations, in order to record, analyze (i.e., range, mean, media, mode), interpret data and present findings.
- [7] SB4.2 The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by recognizing that electric currents and magnets can exert a force on each other.
- [10] SB4.2 The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by explaining that different kinds of materials respond to electric and magnetic forces (i.e., conductors, insulators, magnetic, and non-magnetic materials).

Math

- [6] S&P-3 The student demonstrates an ability to analyze data (comparing, explaining, interpreting, evaluating; drawing or justifying conclusions) by using mean, median, mode, or range (M6.2.3).
- [7] S&P-3 The student demonstrates an ability to analyze data (comparing, explaining, interpreting, evaluating, making predictions; drawing or justifying conclusions) by determining mean, median, mode, or range (M6.3.3).
- [7] PS-5 The student demonstrates the ability to apply mathematical skills and processes across the content strands by using real-world contexts such as science, humanities, peers, and community (M10.3.1 & M10.3.2).
- [8] PS-5 The student demonstrates the ability to apply mathematical skills and processes across the content strands by using real-world contexts such as science, humanities, peers, community, and careers (M10.3.1 & M10.4.2).

Search Terms:

- electromagnet
- circuit
- magnetic field
- electricity
- Michael Faraday
- Joseph Henry
- voltage
- current

