It’s Electric!

Through this home investigation, we’ll be able to learn more about current electricity and the role it plays in our lives!

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Key Terms

Atoms - small particles that make up all matter (any physical substance that takes up space)

- *Electrons(-) - negative charge*
- *Neutrons - no charge*
- *Protons(+) - positive charge*

Circuit - a complete path around in which electricity can flow
Conductor - materials that allow electricity to pass through them (iron, steel, copper, aluminum)
Current - the flow of an electric charge
Electricity - the flow of tiny particles called electrons and protons
Insulator - materials that do not allow electricity to pass through them (plastic, rubber, wood, glass)

Background

Electricity occurs in nature (think of lightning strikes!) but thanks to scientists we also are able to utilize it in our daily lives. In the 18th century many notable scientists such as Benjamin Franklin and Thomas Edison took interest in studying the subject. Over time we have been able to expand our knowledge exponentially, and we’ve come a long way since the lightbulb was invented in 1879!

So how does it work? Atoms can hold different charges and when numerous electrons move from one to another in the same direction - electricity is born! Electrical energy is a result of electrons moving and creating a current - which gives us power. For us to use the power created, we are dependent upon a circuit that has an on/off switch. When the switch is on, the circuit moves power through conductors to a given object (such as light bulbs). Conductors are protected by insulators to help us with safety and controlling the current.

In almost every aspect of our lives we use electrical energy in one way or another. Electricity has reshaped our World! Through this home study we can visualize its importance to us and get a closer look at how it is used in our own space.

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Worksheet
Fill out the following to investigate what is around your home!

Item	Location	Purpose	Power Source
Toaster	Kitchen	Heats food	Plugged into wall
Flashlight	Living room	Provides light	Batteries

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Guiding Questions

1. What location in your home had the most examples of current electricity?
2. How would your life be different without electricity? What are the positives of being able to use electricity?
3. List all of the different ways electricity can be created. Which are most common? Which have been around the longest?
4. Why do we need conductors and insulators?
5. What are some of the dangers that we face when dealing with electricity? What methods of protection or safety are in place with what is in your home?

Extensions

- Create a graph breaking down your data. You can focus on which locations had the most examples, the most commonly seen power source, or even which appliances are used the most!
- Consider renewable energy solutions and think about how they are used. What is the benefit of using these methods? Have you seen any examples of renewable energy in your household or community?
- Think of another location (e.g., school, a grocery store, a baseball field) and complete another study! How does it vary from the connections you spotted in your home?

Additional Resources

https://www.brainpop.com/technology/energytechnology/currentelectricity/