A Supplementary Material in Elementary Science Grade Six

Pathways

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Overview

Current electricity is the kind of electricity you use every day to light your homes and run your appliances. You rely on current electricity more than you think you do. How many times in a day do you switch on or off something electrical?

Circuits are like train tracks. The train can only move along if all the train tracks are properly connected. The parts of an electric circuit must not only be complete but must be connected properly.

This learning material contains short activities about the parts of an electric circuit with answer key, activity cards and an information sheet for the teacher.

The activities are designed to be performed by groups of seven to nine members. These will help pupils formulate concepts about the parts of an electric circuit.

The question/s given under each activity will serve as guide so that pupils will arrive at the particular concept or generalization being investigated. Likewise, the questions under application are aimed to show that the concepts or generalization learned can be applied or associated with real-life situations.

The success of this material will be measured by completion of the activities within the time frame, active participation of the members of each group in performing the activities, and the pupil's ability to describe an electric circuit and identify its parts.

I. Objectives

1. Identify the parts of an electric circuit.
2. Construct a model of an electric circuit.
3. State the importance of switching off lights and appliances when not in use.

II. Subject Matter

A. Topic: Parts of an Electric Circuit

B. References:

"Parts of an Electric Circuit", Science, Health and the Environment V, pp.179-180

"Electric Circuit", Exploring Science, pp.166 PELC 2.1, 2.1.1 (Second Grading Period)

Exploring and Protecting Our World, Carmelita C. Coronel,et al.,pp194-197

Materials:

activity cards	dry cells
Switch	bulbs
conducting wires	pencil
crayons	

C. Duration: 60 minutes

III. Procedure/Strategies

A. Motivation

Say: You have observed from our previous activity how static electricity is produced. Can we use static electricity to light our homes? Why? What about home appliances?

B. Activity (Refer to Activity Sheet)

The activity sheets are to be given only after the teacher has fully discussed the topic about the parts of an electric circuit.

Teaching Hints

- When grouping the pupils, make sure that there will be equal distribution of the more advanced pupils in all groups.
- Move from group to group to monitor the participation of each member of the group while they are working together.
- Inform pupils that the time allotted for each undertaking should be followed strictly to ensure that the activities would be finished on time.

Preparatory Activities

- Divide the class into six groups with seven to nine members. Each group will choose their leader.
- Instruct pupils that they will work on each of the three activity cards one after the other.
- Distribute the activity cards to each group.
- When using the materials, make sure that these will not be distributed at random. Start with Activity 1.
- Set the time frame which you deem appropriate for the pupils to finish each activity.

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C. Analysis/Discussion

Questions for Discussion (Activity 3)

1. How did you make the bulb light up each time?
2. What difference have you observed when you used two batteries?
3. What was the difference when one battery and two bulbs were used? Why?

D. Abstraction/Generalization

What are the parts of an electric circuit?

E. Application

One night, your sister Cindy fell asleep while watching television. You knew that she is wasting electricity. How can you help her save or conserve electricity?

Why is conserving electricity important to our lives?

F. Assessment

Directions: Write the correct answer on your answer sheet. (5pts.)

1. The electricity that flows through the wire is called _____.

   a. static b. simple c. current d. complete

2. A series of dry cells that are connected together form _____.

   a. battery b. wires c. volts d. switch

3. Electricity is complete when the circuit is _____.

   a. opened b. completed c. closed d.ready

4. Current electricity starts from _____.

   a. negative to positive c. the battery to the bulb

   b. positive to negative d. the wire to the battery

5. Which of the following is a conductor of electricity?

   a. rubber b. copper c. wood d. plastic

G. Assignment

Draw an electric circuit and label its parts on a short bond paper.

H. Resource List (excerpt)

Background Information Sheet

The study of the charged particles, in motion, is the concern of current electricity. Current electricity is produced when free electrons flow. Lightning is an example of current electricity. Lightning usually moves in a zigzag manner.

A battery is a dry cell. It is a device that produces electricity as a result of a chemical reaction that occurs in the system. Alessandro Volta was the first one to develop a battery called a Voltaic pile in 1800.

A dry-cell battery has a thick black paste inside that is composed of carbon, manganese dioxide, and ammonium chloride. Embedded into this paste is a solid carbon rod the top of which is connected to the exterior contact cap. The paste mixture is wrapped in paper soaked in ammonium chloride solution. Then, it is placed in a zinc casing. A dry cell is a source or supply of electrons.

As the electrons flow, some of them are changed into heat and light energy. The longer you use heat and light, the more electrons will be taken away from the battery. There will come a time when the electrons that flow will not be enough to produce heat and light. Then we say that the battery is dead. There is no more observable electricity that can be produced from the battery.

To make the bulb produce light, electricity must flow through the wire from the dry cell to the bulb and back to the dry cell. This complete path through which electricity flows from the source and back again is called a complete circuit. The electrical devices and appliances in your home will work only if electricity could flow through a complete circuit.

A circuit is the path through which electricity flows. It has three parts: source, path and resistance or load. There are two kinds of circuits: series and parallel. A series circuit has only one complete path regardless of the number of resistances or loads. A parallel circuit has as many complete circuit as there are number of resistances or loads.

The electric circuit can be defined as a complete path where electricity flows from a source to the load and back again to the source.

Parts of Electric Circuit:

- **Source** – The Source is where the electricity comes from. It is sometimes called as “source of emf”, refers to a generator, a battery of cell or a transmission power line. It is here where the current or electricity starts to flow. The function of the source is to establish difference from a high (+) to low (-) potential point. The potential difference makes the current to flow.

http://scienceray.com/technology/parts-of-the-electric-circuit/#ixzz19U5NXB7m

- **Path** – The Path is all the parts of the circuit where the current or electricity flow. It is the pathway of flowing electricity. The Path is made up of conducting materials "conductor". These are materials that conduct electricity and allow electricity to pass through.
- **Load** – Load are devices that consumes electricity on its operation. Examples are light bulbs, television set, electric fan, radios and many others. They are also called current consuming devices.
- **Means of Control** – The means of control allows us to control the entire circuit operation. It enables us to regulate electricity. Means of control has the capability to connect or disconnect the flow of electricity from the source to the load. It usually comes in different forms, maybe a slide switch, push button switch, circuits breakers and others. The means of control functions in two ways; on or off.

Read more: http://scienceray.com/technology/parts-of-the-electric-circuit/#ixzz19U5toG3I

Activity 1

NAME ME!

Objective

- identify the parts of an electric circuit

Material

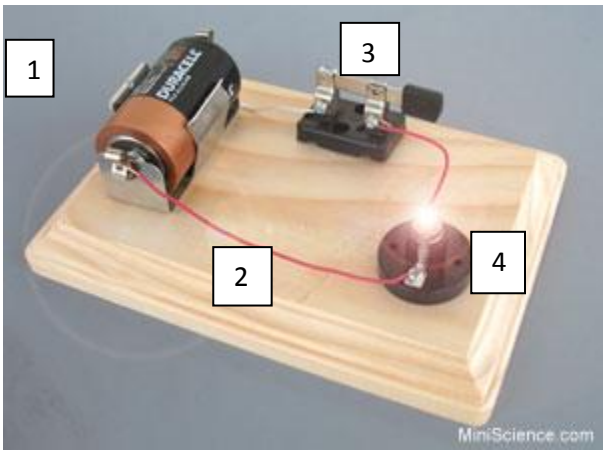
- a clear illustration of an electric circuit

Procedure

1. Study the illustration of a closed electric circuit below.
2. Observe the parts.
3. Then, answer the following questions below.

Here is an illustration of an electric circuit.

A. Label each part.



1. _____ 3. _____
2. _____ 4. _____

B. Direction: Match the parts found in Coumn A with the function in column B.(4 points.)

Column A	Column B
_____ 1. Dry cell	a. used to open or close a circuit
_____ 2. Switch	b. the object that uses the electrical energy
_____ 3. Conducting Wire	c. the source or supply of electrons
_____ 4. Bulb	d. connects the power supply with the object

Activity 2

DRAW IT!

Objective

- draw a simple circuit

Materials

- pencil, crayons

Procedure

1. Read the given items carefully.
2. Using the given items, draw schematic diagram of an simple circuit inside the box provided .

1) 1 dry cell
   2 bulbs
   2 bulb holders
   1 switch
   wire

2) 2 dry cells
   3 bulbs
   3 bulb holders
   1 switch
   wire

3) 3 dry cells
   3 bulbs
   3 bulb holders
   1 switch
   wire

Conclusion

1. What are the basics parts needed to make a simple circuit?
   _____.

2. Which of the parts serve as the source?
   _____ .

Activity 3

MAKE ME!

Objective

- construct a model a simple circuit

Materials:

2-3 pcs. (1.5V) dry cells
1 pc. (1.5V) flashlight bulb
switch
1 pc. bulb holder
conducting wire

Procedure:

1. Using the materials given to your group, construct a model of a simple electric circuit.

Conclusion

1. What is an electric circuit?

   _____

   _____ .

2. How is an open circuit different from a closed circuit?

   _____

   _____

   _____

   _____.

Answer Key

Assessment

1. c
2. a
3. c
4. c
5. b

Activity 1

A.
1. dry cell
2. conducting wire
3. switch
4. bulb

B.
1. switch
2. bulb
3. dry cell
4. conducting wire

Activity 2

Possible Answers:

1. dry cell, wire, bulbs and switch
2. dry cell

Activity 3

Answers may vary.

1. Electric circuit is the path along which electrons flow.
2. In a complete or ***closed circuit***, current can flow from the battery through the wire to the bulb and back to the battery. In this case the bulb lights up while in an **incomplete *open circuit,*** the bulb does not light up because the electrons do not have a complete path to flow through.