Electronic Quiz Game Board

This project brings the concepts of conductivity and completing simple circuits to life.

7-8

GRADE LEVEL

3

PERIODS

$265

TOTAL BUDGET

Curriculum/State Standard

Michigan Curriculum Science Benchmarks (2000): PME5 - Construct simple circuits and explain how they work in terms of flow of current.

Overview

Using knowledge gained from prior classes discussing open and closed circuits, conductors, battery operation, and simple circuits, the students will construct quiz boards with which the user must match a question from one side of the board with the correct answer on the other side of the board. A light bulb will light up only if the correct question/answer combination is selected, because connecting the correct couple will complete a circuit and allow energy to flow to the bulb.

Objectives

- The students will build and observe series and parallel circuits.
- The student will be able to describe how the flow of electricity in a series circuit differs from the flow in a parallel circuit.
- The student will construct an electronic circuit quiz board.

Materials

tri-fold display board (about 36 x 24 inches), C or D cell (battery), C or D cell holder, bulb, bulb holder, wire (12 strips of wire with bared ends), wire cutter, 20 brass fasteners, scissors, masking tape, electrical tape, glue (rubber cement), construction paper, word processor/paper (for typing questions and answers), 2 paper clips (or alligator clips)

Readiness Activity

Concepts to review include battery, electric current, electricity, electric circuit, series circuit, parallel circuit, conductor, insulator, electron, proton, and neutron.

Strategies/Activities

1. Show students a sample quiz board and demonstrate how it works. Tell students that they will be building similar boards. Discuss how the quiz boards work (completing simple circuits).
2. Have students type out 10 science-related questions with answers. For example, the board content might focus on the scientific method, the metric system, the states of matter, chemical equations, etc.

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Sue Pauling
Peace Lutheran
11701 E. 12 Mile Road, Warren, MI 48093

"Electronic Quiz Game Board" project continued . . .

3. On the left side of the board, glue the questions, and on the right side of the board, glue the answers. Scramble them up so each question is next to the wrong answer.
4. Push a brass paper fastener through the board next to each question and each answer.
5. Turn the quiz board over and join up question number one and the right answer with a strip of wire. Loop the wire around the back of the brass paper fasteners.
6. Use masking tape to secure each. Using several sheets of construction paper, cover the wire pattern so that no wire paths can be detected. Secure the construction paper with tape or glue.
7. Connect one strip of wire between the battery and the bulb holder. Wrap with electrical tape. Place one paper clip at the other end of the wire as a "tester". (Alternate material: use alligator clip instead of paper clip.)
8. Connect one strip of wire to the other end of the battery holder. Wrap with electrical tape. Place one paper clip at the other end of the wire.
9. Have students test their quiz boards by touching the wire from the bulb to the fastener beside the first question, while simultaneously touching the wire from the battery to the fastener beside the corresponding answer. If they are correct, they will complete a circuit and the bulb will light up.

Culminating Activity

Students test their boards and trade them; they can then be put on display for other classes or special activities such as Open House or Parent-Teacher Conferences.

Evaluation

completion of working quiz board; neatness and originality of questions and design.