Make an Electronic Quiz Board

Your project will be to build your own electronic quiz board to impress your friends and family! It can be easily constructed, tested and put to work. It does not require prior knowledge in electronics. The only thing required is ***creativity and patience***.

This project involves using the circuit concept in a question and answer device. The front face of the quiz board will contain 10 questions and answers. The user will match the questions with the correct answers using the two wires with paper clips attached coming out from the quiz board. When a question is answered correctly, a light bulb will instantly turn on due to a closed circuit. If the user choses an incorrect answer, the light bulb will not shine due to an open circuit. Have fun and I can't wait to play your game!

Materials Needed:

- Large cardboard shoebox (other types of cardboard boxes will work if they have a cover that can come off)
- Colored paper to cover box
- Brass paper fasteners (brads, at least 20)
- Thin insulated copper wire

- E-10 Miniature Lamp Holder
- Small light bulb
- 2 jumbo uncoated paper clips
- Electrical tape
- 9V battery
- 9V battery snap connector

**** Many materials can be purchased at RadioShack, however a supply bag can be purchased through me for $4 which includes fasteners, wire, lamp holder, small light bulb, paper clips, and battery snap connector ****

**** Battery size/connector changes depending on the light bulb purchased ****

Initial Procedure:

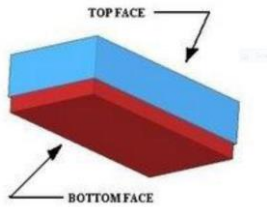
1. Gather the materials to complete your project.
2. Pick chapter from science book in class.
3. Use your book to come up with questions and answers for the quiz board. The questions and answers should be typed. You may use diagrams for some of the questions.
4. Once you have 10 questions, follow the directions on the game construction sheet (attached) to create your quiz board.
5. Place a separate list of your questions and answers inside of your quiz board for grading purposes.
6. Be creative!
7. ***If you have any questions, come look at the example in my classroom.***

Grading Rubric:

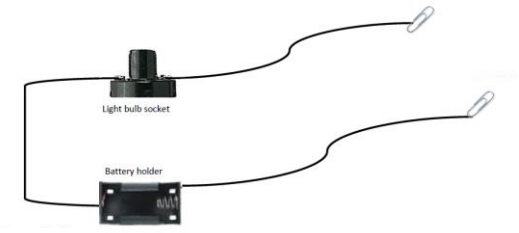
1. My quiz board works accurately. (50 points)
2. My questions and answers highlight the major points of the chapter and are accurate. (25 points)
3. My quiz board is neat, colorful, and pleasing to look at. (15 points)
4. I followed all directions. (10 points)

Game Construction:

1. Take a rectangular box as show in the figure. The box must have a cover that can open or come off and should be made of sturdy cardboard material.



2. Cover the box using colored paper making sure that the box can still be opened and closed.
3. Create a design on the front cover of your box to display your questions and answers. Your questions, answers, and diagrams must be typed or printed from the computer. No hand written or free drawn pictures are allowed. The holes for the questions should be numbered and the holes for the answers should be lettered. Make sure that the questions are not right next to the correct answer. Attach the questions and answers to the front cover of the box.
4. Mark positions for making holes. Carefully make holes through the cardboard using a small nail.
5. The following steps should be completed ***one question/answer set*** at a time to avoid connecting the wrong brass fasteners together.
    a. Insert brass fasteners in the holes where the question and corresponding answer are to be placed. The heads of the brass fasteners should be showing on the front cover of the box.
    b. This is the tricky part of the project. Open the box so you are looking at the back side where you see the brass fastener blades. Using your connecting wires, connect each pair of brass fasteners, by wrapping the exposed wire around the brass fasteners, so that a question and its correct answer have a wire joining them. If you are using insulated wire, you must strip at least 1 inch of the plastic coating off of the wire so that it is bare (peel off the coating). After you have wound the bare ends of the wire around the brass fastener, spread the brass fastener blades apart and press them down on the wire to secure it. Use electrical tape to make sure you have no loose, hanging, or bare wires.
    c. Repeat this process for all question/answer sets.
6. You will end up with a number of crisscross connections. Make sure that all connections are correct and there are no unintended connections formed due to poor taping.
7. Now you have to wire the main circuit. Using connecting wires, the lamp holder, the 9V battery, and the 9V battery snap connector, make connections as shown in the picture below *(using the snap connector in place of the battery holder).* Attach paper clips to the ends of the loose wires using electrical tape.



8. Insert the bulb into the socket. To test this circuit, touch the two paper clips together. If the connections are right then the bulb will glow.
9. Attach the battery to the inside of the box using electrical tape. Make a hole in the front cover and fit the bulb holder **without the bulb** through the back of the hole and secure it using electrical tape. (when the box is completely finished, screw the light bulb into the holder from the front side of the box) Make two additional holes and feed the two wires with paper clips so that they are coming through the front cover of your electronic quiz board. Be sure that sufficient length of the wire is outside the box so that all of the brass fasteners can be reached.
10. Close the box. Now the electronic quiz board is ready to use. ***You should test the game yourself before bringing it to class.***