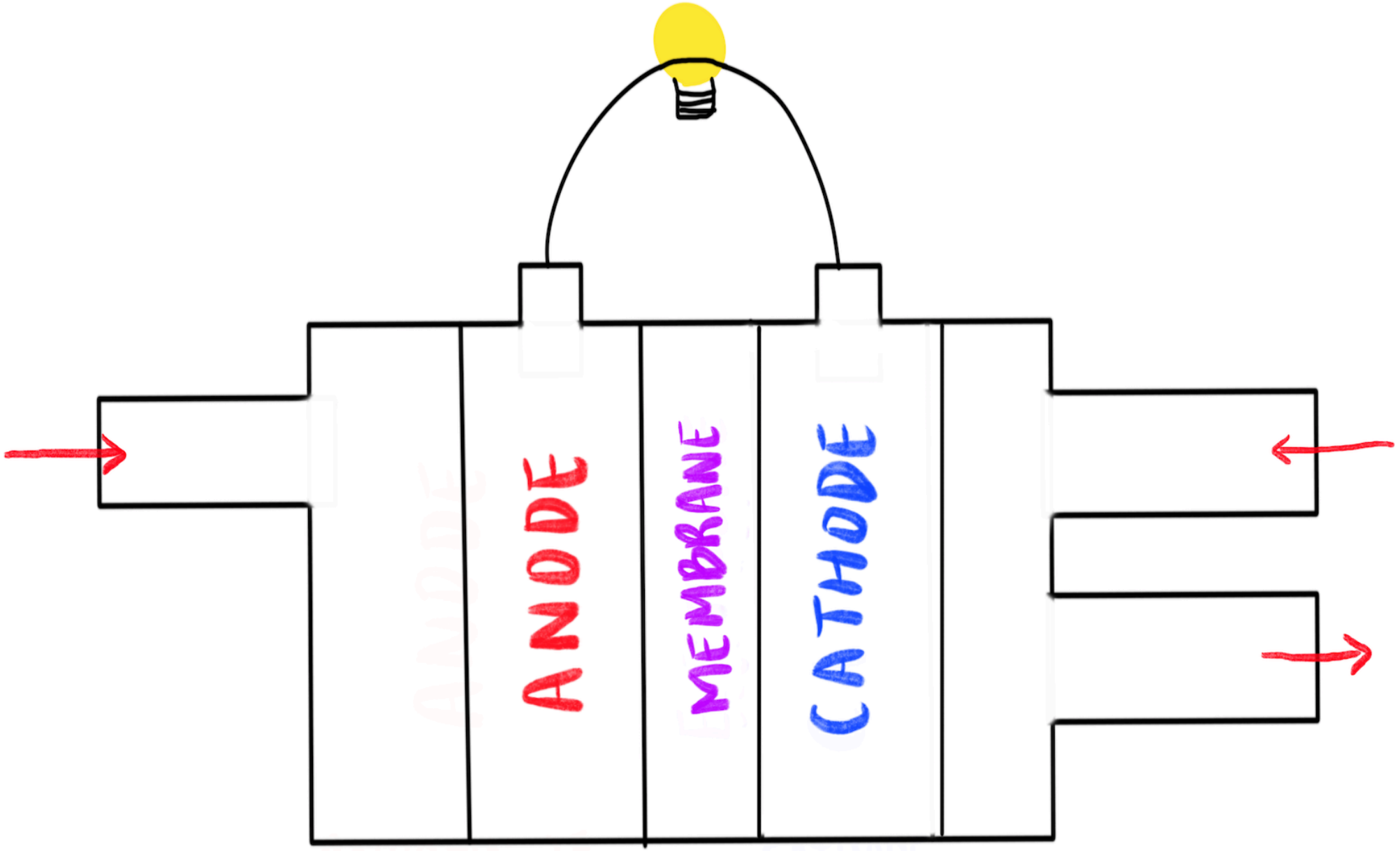
Activity Board



Activity Overview

This activity can be done in groups (max.3) or individuals.
Students are required to model the hydrogen fuel cell electrolysis using Play-doh on an activity board provided. Through this activity, students will be able to gain a clearer understanding of how the fuel cell works in a hydrogen car. The activity will not require any chemicals or experimental setups to understand electrolysis.

Materials

Material	Quantity (per group/ individual)
Activity Board	1
Play-Doh (Red) – Hydrogen molecule protons	Coin size
Play-Doh (Yellow) – Hydrogen molecule electrons	Coin size
Play-Doh (Blue) – Oxygen molecule	Coin size
Phone camera (optional)	1

Students should be provided with the information sheet provided along with the activity sheet. (information that includes how fuel cell works)

Instructions:

Students should be provided with the information sheet provided along with the activity sheet. (information that includes how fuel cell works)
*Arrows indicate the entry and exit of molecules.

By simply placing the Play-doh on top of the A4 activity board paper and moving the Play-doh around, model and explain the following processes:

1. Entry of hydrogen and oxygen. (The direction of entry should be relative to the cathode and anode location; students should be able to create a correct model of gas molecules using different colors of Play-doh.)
2. Splitting of hydrogen into its protons and electrons in the anode; Splitting of oxygen into two separate molecules in the cathode.
3. Movement of hydrogen protons. (Move across electrolyte membrane)
4. Movement of hydrogen electrons. (Move along the wire to light up the light bulb)
5. Formation of water molecules in the cathode. (Collection of H+, electrons, and oxygen molecules in the cathode to form H2O)
6. Exit of water molecules. (H2O leaving through the exit)

Students can take pictures of each process and show the instructor. (If not available, students can explain the process to others in another group)

For Students:

Materials:

Material	Quantity (per group/ individual)
Activity Board	1
Play-Doh (Red) – Hydrogen molecule protons	Coin size
Play-Doh (Yellow) – Hydrogen molecule electrons	Coin size
Play-Doh (Blue) – Oxygen molecule	Coin size
Phone camera (optional)	1

Instructions:

By simply placing the Play-doh on top of the A4 activity board paper and moving the Play-doh around, model, take pictures, and explain the following processes:

1. Entry of hydrogen and oxygen.
2. Splitting of hydrogen into its protons and electrons in the anode; Splitting of oxygen into two separate molecules in the cathode.
3. Movement of hydrogen protons.
4. Movement of hydrogen electrons.
5. Formation of water molecules in the cathode.
6. Exit of water molecules.