



MIND MAPPING

*Thinking
strategies
to enhance skills
of analysis,
creativity,
and problem
solving.*

WHO'S THE CONDUCTOR?

Lesson Description: Students experiment with everyday items and create a mind map to show which are conductors and which are insulators.

SOL/POS Objective:

- 4.3 Sci. Students will investigate and understand the characteristics of electricity.

Materials: color pencils/crayons/markers, large unlined paper, pencils, junk items such as gum erasers, metal pens, paper envelopes, pencils, paper clips, chalk, glass, aluminum foil, coins, hairclips, rubber bands, key, plastic forks, pipe cleaners, plastic straws, craft sticks, etc.

Enduring Understanding:

- Mind maps organize important content to make visual connections.
- Different materials have different electrical properties.
- Electricity can flow through a conductor, but not an insulator.

Introduction/Essential Questions:

- Which materials behave as insulators and which behave as conductors?
- Can an item be both a conductor and an insulator?

Teach and Explore Strategy:

- Focus students on Science: When you hear the words Insulators and Conductors, what pictures, visuals, etc. come into your mind?
- Students select and draw a representation for either term in the middle of their paper as the focus for a mind map.
- Review and list on the board the terms conductors/conductivity and insulators.
- Students will attach two branches to the center focus picture to represent each of the two terms.
- Divide students into small groups of 3-4 students.
- Provide each group with wires, a bulb and a battery to assemble into a conductivity tester.
- Ask student groups to select materials from the table.
- Students will test at least 10 items to determine if they will or will not conduct electricity.
- For each branch, students will attach symbols using colors and key words to show which items are conductors and which items are insulators. Each of the two major branches should split off into smaller branches allowing students to represent groups within the conductors and within the insulators that are sorted by similarities.



MINDMAPPING

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- Debrief as a class: What were findings of the experiments? What were surprises? How did you group your items that were conductors? Insulators? So what can we say now about electricity? How did our mind maps help us with our understandings?

Assessment Evidence:

- Quality/quantity of accurate information recorded
- Teacher observations.

Metacognition:

Did my particular course of thinking produce more or less than I had expected?

Extensions:

- Students create a warning label describing a product which would not operate well if alternate materials were used in its construction. For example, a light bulb built with a plastic thread for a filament would not operate.