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Incandescent vs. Fluorescent

Adapted by Duc Tran, Environmental Science Institute: 11/2010
Source: "Comparing Light Bulbs" by the NEED Project, National Energy Education Development Project.
http://www.need.org/needpdf/PriComparingLightBulbs.pdf
Grade level: 3 – 5
Length: 1 class period
TEKS:
§112.14. Science, Grade 3: 1A, 2A, 2D, 3A, 4A, 5A, 6A
§112.15. Science, Grade 4: 1A, 2A, 2B, 2C, 2F, 3A, 4A, 6A
§112.16. Science, Grade 5: 1A, 2A, 2B, 2F, 2G, 3A, 4A, 6A

Objective: Investigate and compare the light and heat energy produced by incandescent and fluorescent bulbs and discuss how this relates to energy efficiency.

Materials (per group):
- 1 incandescent bulb
- 1 fluorescent bulb
- Thermometer
- Lamp

NOTE: Incandescent and fluorescent bulb should produce equivalent lumens. Lumen is a unit that measures the amount of brightness from a light source. Lumens define "luminous flux," which is energy within the range of frequencies we perceive as light.

Procedure:
Divide the class into groups of 3 or 4 students. Provide each group the same type of materials and work environment.

Part 1: Generate Hypotheses:
Ask the students to make predictions on what they think will occur. Hypotheses should be recorded.
1. Incandescent and fluorescent bulbs do/do not produce the same kind of light.
2. Incandescent and fluorescent bulbs do/do not produce the same amount of heat.

Part 2: Fluorescent Bulb
1. Place a fluorescent bulb in the lamp and turn it on. Observe the light produced.
2. Place a thermometer 6 inches above the bulb for one minute.
3. Record the temperature.
4. Turn off the lamp and let the bulb cool.

Part 3: Incandescent bulb
1. Remove the fluorescent bulb and place an incandescent bulb in its place. Observe the light produced.
2. Place a thermometer 6 inches above the bulb for one minute.
3. Record the temperature.

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Part 4: Analysis & Conclusion

Teacher can gather the data from each group to compile a table of class data.

1. Was there a difference in the kind of light produced between the two bulbs?
2. Did one bulb produce more heat in comparison to the other? Which one?
3. Which bulb is considered more energy efficient? Why is that?