"Perfect curtains"

**Subject: Physics**

Sensor: Light

Overview:
Have you ever woken up in the morning with the light from the sun coming through your window curtains? When you need to get up this is fine but if you worked at night and slept during the day (or were Count Dracula!) this might not be so good. This experiment uses the light sensor to measure how much light is blocked by different materials.

Equipment required: LogIT Datalogger
Light Sensor
Tube of cardboard to simulate the room
Range of different materials to test
Tape/elastic band to attach to the 'window'
Light source such as a torch, low wattage lamp or sunshine

Hazards:
Do not look directly into sources of light as damage to the eye could result.
Do not allow pupils or materials to touch the light source.
Always check your local regulations or the school advisory service such as CLEAPSS or SSERC for guidance on the use of any hazardous materials or chemicals.

Setup:
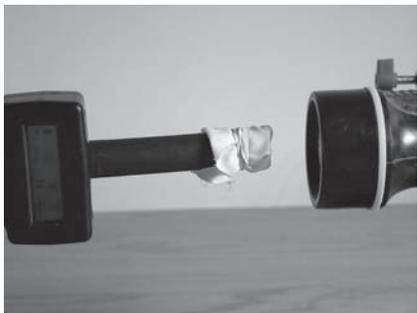
1. Place the small tube over the light sensor to form the room.
2. Place the light source at the end of the tube.
3. Measue or mark the distance from the light source to the end of the tube. Keep this distance constant for each material.

Note: The use of the tube over the light sensor prevents any stray light from entering the light sensor without passing through the material first.

Method:
1. Connect the sensor to the datalogger.
2. Run the datalogging software and setup the 'snapshot' facility to take individual readings.
3. Discuss which materials will block the most light and which will let the most through.
4. Choose a piece of material and write down its description.
5. Place the material over the end of the tube fixing with an elastic band.
6. Point the material at the light source and take a reading via the software.
7. Repeat for each material being tested.

Note: If computers are limited, you can use the remote snapshot facility on most LogIT dataloggers. The results can then be downloaded to the computer for further analysis.

Results:
• Which material kept out the most light?
• Which material let the most light through?
• Would the best material at blocking light be suitable for curtains?
• Decide how best to show the results found.

Going further
• Try moving the light source closer or further away.
• Try using two pieces of material stuck together.
• Design a shower curtain. What are the different properties requred for a shower curtain over a room's curtain? How might you investigate these properties?