

## LIGHT - PERFECT CURTAINS

### SENSOR(S)

- Internal Light

### INVESTIGATE

- That light can pass through some materials and is blocked by others
- Materials are often chosen for specific applications depending on the way they affect light
- How to interpret results and apply them to ‘real world’ applications
- Difference between translucent and transparent materials



### INTRODUCTION TO THE INVESTIGATION

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.

Using the Explorer and it's built in light sensor you can investigate the way that light can be blocked by certain materials. The pupils can use this task to test different materials to see which would make the best set of curtains in a room to keep the morning sun out and so help someone stay asleep . This can help show the link between science/technology and the ‘real world’.

Because the internal light level sensor is designed to work in such a wide range of light, from a dimly light classroom to bright sunshine, the amount of change shown can appear small. It is therefore best to use an additional light source when carrying out this style of investigation e.g. a lamp or bright torch (see the section on the light sensor in part 1 of the manual).

### RESOURCES

- Explorer datalogger , datalogging software, computer, LogIT computer link cable
- Small, hollow cardboard tube or similar to simulate the room. Alternatively the fibre optic could be used.
- Range of different materials to test.
- Tape/elastic band or similar to attach material to window.
- Light source such as torch, low wattage lamp or bright sunshine.

### WHAT TO DO

- Take a small cardboard tube, pen lid or similar and place it around the built in light sensor on the Explorer - fix it in place with sticky tape or similar. Material can then be placed over the other end of tube - the tube can be thought of as the 'room' and ensures that only light passing through the material is monitored. The fibre optic could be used instead of a tube.
- Place the light source at the end of the tube - ensuring it is not too close in case the bulb becomes hot.
- Measure or mark the distance from the light source to the end of the tube - keep this distance constant to ensure a fair test (discuss this point with the pupils).
- Connect the Explorer to the computer and run the datalogging software.
- Set up the snapshot facility of the software (if available).\*\*
- Discuss which materials will block the most light and which will let the most through. The pupils could place them on a desk in the order of which they think will block the least to the most light.
- Choose a piece of material and write down its description so that when you come to view the graph you know which point on the graph refers to which piece of material.
- Place the material over the end of the tube.
- Point the Explorer and tube at the light source at the measured distance (fair testing)
- Press the snapshot button on the software
- Repeat this for each piece of material to be tested.
- When finished print and save the results - decide on the best way to show the results.
- Discuss and/or write up the findings and whether they matched the predictions.

\*\* If computers are limited, or if your software does not support snapshot, the same investigation can be carried out using the Explorer's remote snapshot facility which is selected by using the blue button. Results can then be downloaded to a computer.