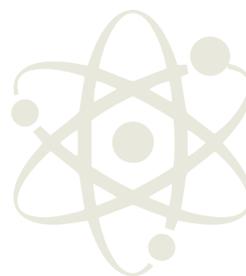




making physics matter



Age  
5-7  
years

# Phizzi practical

## Bear cave

### Introduction

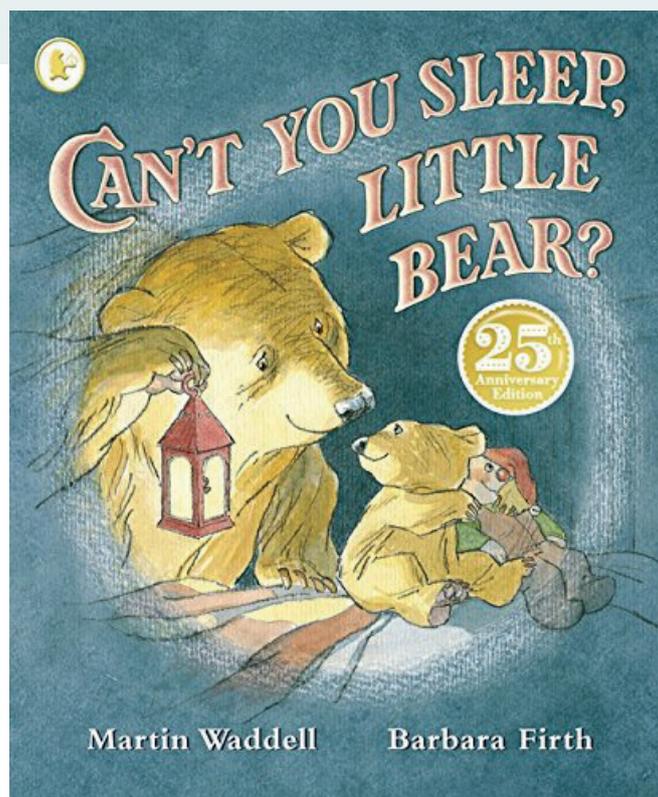
This practical activity provides an opportunity for younger children to explore how different materials interact with light and begin to develop their own explanations about how we see. The activity could link to a number of picture book stories about being scared of the dark, but a favourite with Ogden partnership schools is *Can't you sleep, Little Bear?* which is why we have the context of the bear cave.

### Scientific explanation

In order to see we need light to be emitted from a natural or artificial light source, such as the Sun, a torch or a candle. This light must enter our eye where it is detected by special cells in the back of our eye which then send a signal to our brain.

Light interacts with materials in different ways. For example, a shiny metal surface is very smooth and reflects most of the light rays in a predictable direction whereas matt surfaces are uneven on a microscopic scale, so light rays are reflected in all directions (scattered).

Light can also pass through materials. We classify materials into those that are transparent, translucent or opaque – transparent materials let all the light through; translucent materials let some light through; and opaque materials let no light through.



### Equipment needed

- Black plastic bucket with three holes cut in it: a small, circular peep hole; a rectangular window (8cm x 6cm); and a small triangle
- Velcro tape
- An LED candle
- Printed images from the story stuck inside the bucket, including a picture of a fire
- A variety of small stickers including glow in the dark, highly reflective, bright coloured and dull stickers
- A variety of curtain materials (10cm and 8cm) including opaque, translucent and transparent
- Alongside this resource, you should view the Ogden bear cave video found online with this resource: [www.ogdentrust.com/resources](http://www.ogdentrust.com/resources)

## Method

1. An adult should cut the holes in the bucket in advance of the lesson, the video clearly shows the positions of each of the three holes.
2. Stick a section of velcro tape above and below the rectangular window to secure curtain materials into place.
3. Stick a printed image of a fire over the triangular hole.
4. Stick images of characters from the story inside the bucket as well as a variety of small stickers of various materials and colours.
5. Begin by fixing an opaque curtain over the window. Ask the children to put their hand over the triangular hole then look through the peep hole and describe or record what they can see.
6. Ask the children to remove their hand from the triangular hole and repeat their observations, describing or recording what they can see. (They should be able to see the fire).
7. The children can then investigate changing the materials on the window and comparing what they can see inside the bear cave. Perhaps they could keep a tally of how many objects they can see with each curtain material?
8. Finally, ask the children to place an LED candle inside the bear cave and describe or record their observations.



## Working scientifically

This activity will help children develop skills in carrying out a comparative test; by keeping a tally of how many objects they can see in the cave with different curtain materials they will obtain a dataset to help them answer questions about the best material for curtains. Children could draw a block diagram of their data and use it to support their answers to questions about materials.

The bear cave provides many opportunities for children to use scientific vocabulary to describe their observations. After exploring the bear cave, they could use a torch to sort materials and objects into three boxes labelled transparent, translucent and opaque. This will give further opportunity to use scientific vocabulary as well as developing identifying and classifying skills.

## Teaching tip

Black plastic buckets are often used by florists, we have found that some florists will donate old buckets to schools or sometimes sell them for a small cost.

