Teaching Science to Children. Can we see in the dark?*

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Abstract

This module is aimed at teachers who are teaching science to young children. The intended age range is 5 - 7 year olds.

Many children live is modern cities and have never experienced total darkness. They often believe that they are able to see in the dark and do not understand the difference between no light and very little light. This module aims to help teachers address that and to teach children that we must have a light source if we are to see.

1 Aim

The aim of this module is to teach children that they cannot see in complete darkness, but that if they give their eyes time to adjust, they can see in very low light levels.

2 Possible Starter Activities

- Tell a story about a child who was afraid of the dark.
- Have a class discussion about bedtime. What can they see in the bedroom when the lights are off?
- Turn off the lights and close the blinds in the classroom. Ask the children to look around the room. What can they see? Is it easy to see things in the gloom? Ask them to look for light sources, is the room really dark or are there some sources of light in the room? Ask them to imagine what the room might look like if we were able to get rid of all the sources of light. Would we still be able to see?

3 Possible Main Activities

The main activity is an experiment to see which materials can be seen in the pitch dark and which can best be seen in low lighting conditions. You will need a dark place in the classroom. If you have a tall table you make a camp under that. A children's plastic wendy house is also good. Cover it in plenty of dark material. Blackout curtains are best. Get inside and make sure it is pitch black. Add some soft cushions, a stool and other soft objects around the edge of the dark. Remember that the children will not be able to see so think safety and do no put anything in the darkroom that they may hurt themselves on.

Now hide a selection of coloured objects in the darkroom. Make sure you use at least one silvery/shiny object.

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Have a duplicate set of objects outside the dark room. Invite the pupils to make a prediction as to which object they will be able to see in the darkroom.

Allow the children into the darkroom. Ask them questions, what can they see? What objects can they find? Now give them some torches and let them find the objects.

For children this young it is best to reinforce the learning immediately they come out of the darkroom. Ask them to discuss their findings with you or a classroom assistant. What objects could they see in the dark? Was this the answer they expected before they went in? When they **did** have a light source which colours were easiest to see?

4 Another Possible Main Activity

Peep box

Figure 1: A box for pupils to peep inside

Take a shoebox and cut a small hole in one end for pupils to look through. Make a small flap in the lid.See figure 1. Place an object in the shoebox far from the viewing hole and under the flap. Ask the pupils to peep through the hole and see if they can guess the object inside when the flap is closed. Now open the flap so that light enters the box and let them look through the viewing hole. Can they see now? Invite them to explain to yourself or a teaching assistant why it is easier to see the object with the flap open.

5 Assesment

One possible way of assessing the pupil's understanding is to ask them to make a comic strip about going into a dark cave. They can imagine the light fading as they go deeper and deeper. What would happen if their flashlight and any other light source fails?

6 Online Resources

- Where is the light source?[1] An interactive whiteboard resource. Pupils are asked to identify the lightsources in various pictures. The instant "check answers" button allows pupils to self assess. In addition the night time scenes allow teachers to reinforce the learning objective- even though it is dark, there **must** be a light source.

[1] http://www.ngfl-cymru.org.uk/vtc/Phase2delivery/Wales/Science/Keystage1/Physicalprocess/Light/Introduction/default.htm

7 Online reference material

- English national curriculum[2]
- Video following a girl learning about light[3]

[2] http://www.standards.dfes.gov.uk/pdf/primaryschemes/sci1d.pdf
[3] http://www.teachers.tv/video/2486