

Task 2

Describe that Shadow

Notes for teachers/ adults supervising the task.

Objective: To recognise that shadows are formed when light from a light source is blocked by an opaque object and that the shadow will be different if the object is transparent or translucent.



You will need:

An overhead projector, a screen or light coloured wall and a collection of opaque, transparent and translucent objects including a pair of glasses with clear glass lenses and opaque frames.

1. Switch on the overhead projector so that it is projecting onto a screen or wall.
2. Place a pair of glasses on the screen. Look at the shadow? What is it like? Hopefully some of children will notice that the frame casts a solid dark shadow whilst the glass lenses cast hardly any shadow or none at all. Ask the children why this is and discuss their ideas. Explain that the frames are made of a type of plastic that blocks the light. We call materials that block light opaque. The frames of the glasses are opaque because no light passes through. But what about the lenses? Yes there is no shadow so the lenses are not blocking the light. Materials that allow light to shine straight through like glass are called transparent. If you look through a transparent object you can see right through it. Leave the glasses on the projector.
3. Ask a child to choose another object from the selection to put on top. Look at the shadow it casts on the screen. Discuss the shadow. Is it made of opaque material, or transparent, or both like the glasses? If a shadow is cast that is not as dark as the frames of the glasses, ask the children why this might be. Explain that there is a third type of material that we call translucent. Translucent materials allow some light to pass through them but they scatter the light in all directions. This means that you cannot see clearly through them. In other words, they blur the detail of what you can see when you try to look through them. Pass round a translucent object for the children to look through, e.g. a

sandwich tub or clean milk carton of the type shown above. Encourage them to put their hand directly behind it. Can they see the vague shape of their hand? Discuss how the shadow of a translucent object is different from the shadow of a transparent object. It may be dark but not as dark as an opaque object.

4. Ask each child in turn to select an object and get the group to predict what the shadow will look like by making decisions as to whether it is made from transparent, translucent or opaque material. Test it out on the projector. It will be useful to keep the glasses on the screen as a reference point.
5. Discuss the fact that coloured plastics and glass can be transparent (if you can see clearly through them), or translucent (if you can't). What do they notice about the shadows of coloured transparent objects? Yes - they cast a coloured shadow! This may be useful to remember when we create our shadow puppet shows.