Free resources

Picture for talk

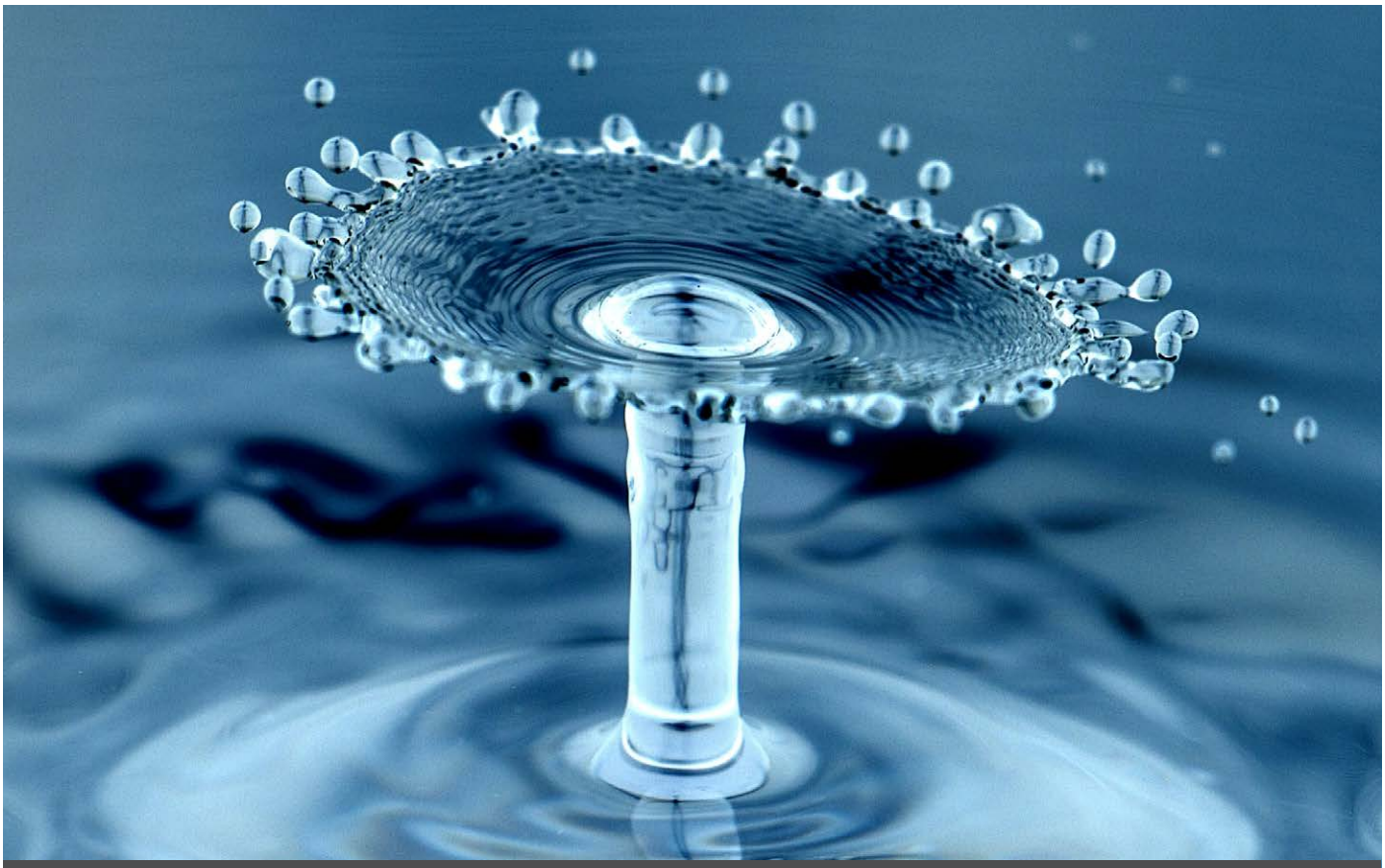

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Figure 1

A picture can be a very good stimulus for children to engage in effective talk in science.

Using pictures is an inclusive approach which facilitates high levels of participation. Pictures can also be used as a starting point for inquiry. The discussions the children have will generate questions that they want to investigate.

Asking the children carefully chosen questions about the picture will support them with learning to:

- Construct explanations and link their ideas with evidence
- Make confident challenges to the ideas of others
- Explore scientific terminology and use it with genuine understanding

Pictures for talk in science activities are designed to be very open ended and usable with any age of children. The activities can be done as a quick ten minute starter, or extended into a longer and more in-depth lesson.

What to do

Download the image in fig.1 by following the link and either display on a whiteboard or give out printed copies. Ask the children to discuss, in groups of three, the following questions:

What can you see in this picture?

How do you think the water has become this shape?

This is a picture of two water droplets colliding. When a droplet of water hits the surface of a pool, it becomes part of the water in the pool. The energy of the falling droplet dissipates into the pool creating ripples in the pool and making a splash. Unlike the splash made when a larger object hits a pool of water - imagine someone jumping into a swimming pool - the splash made by a single droplet is very small. This small splash can take the form of a new single droplet, slightly smaller than the original droplet, which travels upwards away from the pool. Then if a second falling droplet hits this new droplet that is moving upwards, it can result in something like this picture, where the colliding drops are dispersed sideways.

Water molecules are attracted to each other. At the centre of a water droplet, these attractive forces exist between the molecules in all directions. However, at the surface of the droplet, the water molecules have fewer molecules next to them which results in a stronger attraction to centre of the droplet.

This stronger attraction towards the centre creates surface tension, making the surface of the water behave like a sort of skin. Because of surface tension, the shape of a water droplet tends towards a sphere, as this is the shape with the lowest surface area for a given volume.

Other questions to generate and promote thinking and explaining

- What shape is a droplet of water? What shape is a raindrop?
- How might the shape of a droplet of water change as it falls?
- What do you think happens when a droplet of water lands in a puddle of water?
- What do you think happens to the surface of the puddle?
- What do you think is the biggest volume that a water droplet can have?
- How do raindrops form? What makes them fall?

Follow-on discussion ideas

Have a look at other pictures or slow-motion videos of water drops colliding with each other.

Ask the children to discuss what factors might affect the outcome of one water droplet hitting another. These might include:

- Speed of the water droplet
- Height of the water droplet moving upwards
- Time gap between when the two water droplets were dropped
- Point of contact of the collision, i.e. if the centres of the droplets are vertically aligned or offset, temperature of the water, disturbance to the surrounding air, e.g. wind speed and direction.

The children could try observing water droplets hitting a container of water. It is quite hard to see as everything happens very fast, but using food colouring for the water droplets would help them observe more easily.

Click here for other amazing photographs of water droplets colliding

Click here for brilliant and super slow-motion video shows two droplets colliding

Click here to find out more about the technology and process involved in capturing an image of two drops colliding