Student Sheet

In this practical I will be:

- Carrying out and observing the results of the practical.
- Reporting my findings using evidence from the practical.
- Drawing a conclusion of what happens when water is dropped onto wax.

Introduction:
You are working late in your studio, painting by candle light, it has started to rain. You see that rain water has fallen on some melted candle wax and that something peculiar has happened. Like all good science-artists, you decide to investigate further…

Equipment:

- 1 large piece of waxed paper
- 1 wooden toothpick or wooden splint
- Red, green, yellow and blue diluted food colouring in small bottles
- Water in a small bottle
- 5 pipettes or eye droppers for the colourings and water
- Paper towels
- Disposable plastic gloves

Wear disposable plastic gloves

Method:

1. Take the waxed paper and lay it flat on the table.
2. Using a pipette or eye dropper suck up a small quantity of one of the food colourings.
3. Put some scattered drops of the food colouring onto the surface of the wax paper.
4. Repeat steps 2 and 3 with another colour.
    - What do you see happen to the colours on the wax?
5. Record what you see by drawing a picture, taking a photograph or writing a sentence.
6. Now take a toothpick or splint. Dip one end into water hold it there for a few seconds.
7. Remove the splint or toothpick from the water.
8. Dry it on a paper towel.
9. Place the wet end of the splint or toothpick close to, but not touching, one of the coloured droplets on the waxed paper. Watch carefully.
    - What happens?

10. Record what you see by drawing a picture, taking a photograph or writing a sentence.

Going Further:

Now use the effect to create a picture or design.

Theory:

The molecules of wax push away from the water molecules in the coloured drop. The wax molecules pull towards each other to form a surface the water molecules cannot link to. The water forms a coloured bead. When the wet toothpick or splint is brought close to the coloured bead it is drawn to the toothpick or splint. This is because the water molecules on the wood attract the water molecules in the coloured bead. This attraction is known as **cohesion**. If there is attraction between two substances that are not the same it is known as **adhesion**.

Wax and water do not mix. Oil and water do not mix either. This is because wax and oil are made up of non-polar molecules. Water molecules are polar in nature; they are electrically charged with a positive and negative end to the molecule. This means that water molecules attract each other the positive attracts the negative, but they do not attract non-polar molecules, which are not charged.