Plastic Waste Breakdown Experiment

Explain to students that they will experiment to see how a range of common household items react to being left in water. They will test items in both freshwater and saltwater (to replicate seawater). From this they will be able to see what happens to waste items when they get blown or washed into water courses and the ocean.

Materials:

You will need a range of plastic household materials and packaging waste, such as plastic bags, containers, bottles and straws. You could also try to find packaging products that are advertised as being made from biodegradable materials, such as bags or containers. Try to have two pieces of each waste item so you can test each item under different conditions. Alternatively, where possible, cut waste items in half.

If you want to extend this project you could also collect a range of other common household waste items made from different materials, such as items made from paper, cardboard, metal or glass. Again try to have two pieces of each waste item so you can test each item under different conditions. Alternatively, where possible, cut waste items in half.

You will also need:

- Plastic buckets or containers big enough to submerge waste items in water
- Water
- Salt
- Labels
- Stones

Instructions:

1. Fill buckets or containers with water. Ensure you have at least one bucket with just fresh water and label this bucket as ‘fresh’.

2. Create at least one bucket of saltwater. You can create saltwater by adding 35 g of salt to a beaker, then add enough tap water until the total mass of your beaker is 1000 g. Label this bucket as ‘salt’.

3. Put one type of each waste item into each bucket and use a stone or other heavy item to hold the item under water. Attach a label to each bucket to identify the waste items. Ensure you keep a record of which items went into which buckets (if you are adding paper or cardboard items you may find these disintegrate over time). You could consider taking photos of all the items you add to the buckets before you submerge them.

4. Invite students to predict what they think will happen to each item and keep a record of these predictions.
5. It's up to you to decide how long you keep the experiment going, but keeping it going for several months could be useful and interesting. You could also return to the buckets at regular intervals to check what is happening with waste items and to record any changes (by taking photos or in writing). You could also take turns to frequently agitate the water as might happen in the sea or a waterway.

6. At the end of your experiment period remove the items and observe any changes. What is interesting or surprising about your results? Did your experiment meet your predictions?

7. Finally, take any waste items and place them in the appropriate bins.