

## Upcycled science – ideas for recycling single use plastics in science lessons

One of the many highlights of PSEC 2019 was the introduction of Practical Pick and Mix sessions. During this 'lunchtime bonus in the exhibition hall', delegates were able to browse through a range of excellent suggestions and resources for delivering exciting practical science.

### Bubble snakes

Children love bubbles! Many questions can be raised by making this simple bubble blower.

#### YOU WILL NEED:

- Water
- Washing up liquid
- Bowl
- Small plastic bottle
- Socks
- Rubber bands
- Scissors

#### INSTRUCTIONS

1. In a bowl, create bubble mixture with 1-part washing up liquid and 2-parts water.
2. Cut off the top third of a bottle.
3. Cover the now open end of the bottle tautly with a sock.
4. Secure the sock with a rubber band.
5. Dip the sock end of the bottle into the mixture and \*blow into the neck of the bottle to create a bubble snake.

#### EXTENSION IDEAS

- Explore different types of washing up liquids.
- Try different ratios of washing up liquid to water.
- Set the challenge of creating the longest bubble snake.
- Observe the types of bubble created by different sock materials.

#### LEARNING OUTCOMES

- Exploring different variables and observing outcomes.



Debbie Jones, PSTT Fellow and Area Mentor, shares some tried and tested practical approaches to recycling single use plastics from her Up-Cycled Science Pick and Mix session. Up-Cycled Science brings a recycling dimension to practical science activities – for example, you’ve probably grown bulbs in class before, but have you thought about using recycled plastic bottles for this?

## Bird feeders

**Bird feeders are simple to make and provide a valuable opportunity for bringing more wildlife onto school grounds. As time passes, children will gain more experience in identifying different species.**

### YOU WILL NEED:

- Small plastic bottle
- Pencil or dowel
- Wire or thread
- Food: \*seeds/dried mealworms
- Scissors

### INSTRUCTIONS

1. Cut a small hole on each side of the plastic bottle.
2. Push a pencil or piece of dowel through the holes to form a perch.
3. Pierce a hole on each side of the neck of the bottle to hang it up with wire or thread.
4. Above each side of the perch, pierce a larger hole for the birds to access the food.
5. Fill the bottle 2/3 full with seeds or mealworms.
6. Hang the feeder out of reach of children.

These are simple to make and could be made as a science or gardening club activity.

### EXTENSION IDEAS

- Explore different types of food to see which birds prefer which food.
- Encourage children to spot different types of birds using identifiers, such as those freely available from the Woodland Trust.

(see [naturedetectives.woodlandtrust.org.uk/naturedetectives/activities/2015/06/garden-birds-id](http://naturedetectives.woodlandtrust.org.uk/naturedetectives/activities/2015/06/garden-birds-id))

### LEARNING OUTCOMES

- Observe and identify different types of birds in the local environment.
- Describe the appearance and habits of different types of birds.



**In schools, it is essential to avoid nuts in case of allergies**

## More upcycled science ideas

### Growing walls

Bring part of your school grounds to life by creating a living wall. This is most easily done along a wire fence, but plants could also be hung from fixings along a brick wall.

#### YOU WILL NEED:

- Small plastic bottles
- Soil
- Water
- Young plants: trailing flowers, vegetables, herbs
- Scissors
- Wire

#### EXTENSION IDEAS

- Explore how plants respond to more/less water/sunlight.

#### LEARNING OUTCOMES

- Observe different plants and how they change over time.
- Know what plants need to grow.



**Bottles could also be hung horizontally depending on the plant/space available. In this case, the bottle would need to be secured to the wall at both ends**

#### INSTRUCTIONS

1. On the upper section of the bottle, cut away a rectangular piece that is around 2/3 of the bottle's circumference.
2. Pierce the bottom of the bottle 3 or 4 times for drainage.
3. Pierce a hole on each side of the neck of the bottle to hang it up with wire or thread.
4. Add soil to the bottom of the bottle.
5. Place the plant in the soil and water it well.
6. \*Hang the bottle on the wall.





# Bulb growing

**A great way to explore the question 'Do plants need soil to grow?'**

## YOU WILL NEED:

- 300ml/500ml plastic bottle
- Hyacinth or daffodil bulbs
- Water
- Scissors

## INSTRUCTIONS

1. Remove the lid and cut off the top third of the bottle.
2. Invert the drinking end of the bottle and push it onto the cylindrical part.
3. Fill with water to where the base of the bulb will be.
4. Place the bulb into the inverted drinking end of the bottle.

## EXTENSION IDEAS

- Explore the rate of growth of different types of bulbs.
- Place bulbs in different places around the classroom to see which grows best.
- To avoid puddles in the classroom, make milk bottle watering cans – punch several holes in the lid and pierce a small hole just above the neck to facilitate airflow and minimise the mess!

## LEARNING OUTCOMES

- Observe how bulbs grow.
- Know what bulbs need to grow.

These ideas were brought to you by **Debbie Jones**, PSTT Fellow and Area Mentor for the West Midlands. She also works as an Edina Trust Science Grant Scheme Consultant for Wolverhampton.

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## Safety notes

\*PSTT recommends a full risk assessment of the activities described above in line with your school policy. In particular, care should be taken when using bottles with cut edges. If in doubt, please refer to ASE's *Be Safe!* document and

the CLEAPSS website ([www.cleapss.org.uk](http://www.cleapss.org.uk)), or consider the approach shared here for further advice: [www.gardengatemagazine.com/articles/how-to/plant/how-to-make-a-soda-bottle-cloche](http://www.gardengatemagazine.com/articles/how-to/plant/how-to-make-a-soda-bottle-cloche)