

Pink Pee

Year 4 – Science

Year 5 – Science

Year 6 – Science



(Science; Yr 4, ACSHE062)

Science knowledge helps people to understand the effect of their actions

(Science; Yr 5, ACSHE083)

Scientific knowledge is used to solve problems and inform personal and community decisions

(Science; Yr 6, ACSSU094)

The growth and survival of a living thing is affected by physical conditions of its environment

Pink Pee

Why do vegetable colours pass through our bodies?

Living things, including humans, absorb the liquid and nutrients in food and water, then eliminate unused substances as waste.

This hands-on activity explores how the digestive system works and helps show that some food colours can pass all the way through our bodies.

Equipment:

Snap-lock plastic lunch bag	Old knee-high ladies stocking (no holes)
Duct or electrical tape	Bucket
1 cup mashed potato or apple sauce	Wire coat hanger
Water	Scissors
1-2 slices of cooked cold beetroot	

Duration:

30 minutes, plus time for the model to drain

Location:

The classroom

Notes:

Pink Pee!



? Discuss: what happens to food when we eat it? Explore the role of the stomach in squeezing and mixing food with acids to break it down, how the intestine allows for the slow absorption of nutrients and water from food, and the bowel passes solid waste that we eliminate (poo) out of our bodies.

? It's time to make an analogue (model) to represent the way food moves through our bodies.

1. Take the snap-lock bag and tip in the apple sauce or mashed potato.

? Explain: This bag represents our stomach.

2. Add the slices of cooked beetroot and zip the bag closed.

3. Mash the food gently two or three times.

? Ask students what they observe. Is the food mixing? Is it sticking? Is it difficult to get it to mix? What do students think will happen if we add water?

4. Open the bag and add about a quarter cup of water.
5. Mash it again and ask students to observe what happens.

? What is different? The water should make it easier to mix the two foods in the bag. (This is one of the reasons we drink water – to help process our food.)

6. Zip the bag shut and tape it securely closed.

? Hold it up and ask: what is in our 'stomach'? What does the stomach do to our food?

7. Start mashing the food in the bag. You might get students to mash and mix it too. You should soon observe the pink from the beetroot staining the potato or apple as it breaks down and mixes.

8. Keep mixing and mashing until the bag is full of pink material. (You know it's well mixed when it is all the same pink and the lumps are gone.)

? Ask students to tell you what is different about how it looks and feels now.

? How else do you think we might help our bodies mash the food better? (Proper chewing, exercise, belly breathing!)



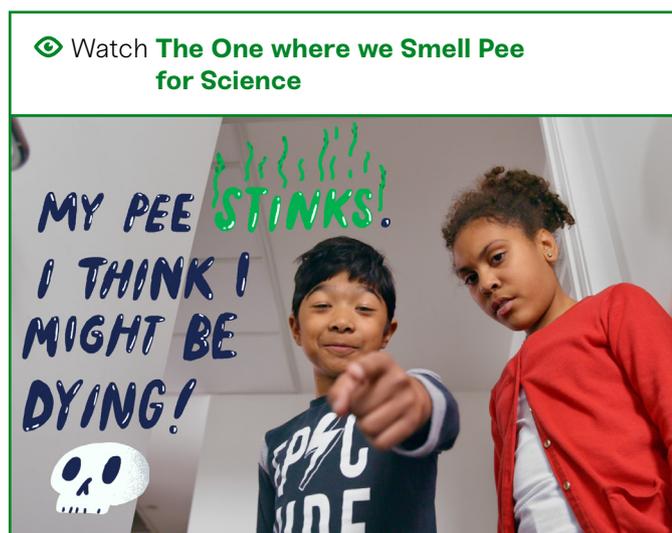
Setting up the 'digestion station'

- Cut one corner off the bag (a 2cm opening will be ample).

(If you taped the top, zip the area shut, try squeezing all the liquid away from one of the bottom corners, then hold it upside down and clip off the corner.)
- Carefully tape the ladies' stocking to the corner. (Do this over a bucket in case it drips.)
- ?** Explain that this is like our intestine. Food comes out of the stomach, into the intestine (squeeze a little bit through) and eventually, after all the nutrients and water have been extracted, the substances that our bodies can't process are eliminated as poo and pee.
- Put the bucket on the floor under the bag and hold the bag so that the stocking dangles over the bucket. The solids in the bag shouldn't do much at first, but over time will start to drip down into the stocking.
- Tape the bag to the coat hanger so that the cut corner and stocking are hanging down, and set the whole contraption somewhere that the bucket can catch the drips and drain for several hours – you may like to loop the coat hanger over a door handle and put the bucket underneath.
- After half a day or so, check it – you may need to squeeze and mash the stomach a few times to get the solids to enter the 'intestine'.
- Later, when the material has collected at the bottom (toe end) of the stocking, examine it ('the poo'). Can students see any of the colour we added in the form of beetroot? What about the liquid in the bucket (the 'pee')? Is it pink?

Digest What You've Learnt

- ?** Do some vegetables and other foods contain substances that pass all the way through your digestive system?



(Especially the bit where Jonathan thought he was dying because his pee smelled terrible.)

In this case, asparagus does – the smell is a chemical in asparagus that our body does not need and passes through in our pee.

- Students create posters with a diagram of their digestion analogue (the set up) alongside a diagram of the human digestive system.
- They explain the main process in each area of the digestive system (oesophagus, stomach, large intestine, small intestine), and research other components of the human digestive system such as the liver, pancreas and bladder.

Stretch

Watch **The One with a Superstar Fridge**



- ? Ask students to design a revised analogue that takes into account one or more of the other components of the digestive system and their functions: how, for example, could we demonstrate bile from the liver, and what function it serves?

