

From the Chew to the Poo! Science Show



Information for teachers
and group leaders

What will the show involve?

From the Chew to the Poo! is an entertaining 45minute show where children follow the fascinating journey of a banana and peanut butter sandwich from the moment it is eaten to the moment it leaves the body as waste. Through a series of interactive activities children will find out how saliva in the mouth breaks down food in order for it to be swallowed, how our bodies retain the vitamins and minerals our bodies need and more amusingly how it gets rid of what we don't need.

The show is presented by two members of the Eureka! team and will provide lots of opportunities for children to get involved with the show whether it be as volunteers for a particular demonstration or as whole audience participation.

Please note that the show may contain elements of the curriculum not yet covered by some pupils but nonetheless will still provide an interesting and informative experience for the children.

Is there anything I need to do to prepare the children before the visit?

YES! A part of the show looks at the different kinds of teeth and to help remember what their functions are we have a song. A copy of the song is included at the end of this pack and it would be very helpful if you could practice the song with your class in anticipation of our visit.

Peanut allergies

Please note that although we refer to the sandwich as containing banana and peanut butter we actually do not use any peanut butter in the show so there is no risk whatsoever to anyone who has peanut allergies.

Evaluation

Eureka! constantly aims to improve its programmes for school groups and feedback from adults and children is an essential part of this. We value all comments made and will always try our best to act upon them. As part of this pack we have enclosed an evaluation questionnaire for the lead teacher to complete after the visit and which can be posted or emailed back to us.

Additional resources & information

The following pages contain various supporting resources and information related to the science show.

Please find the following documents in this pack:

- **Teacher's assessment chart** - *this outlines the aims and objectives of the show, including the key activities which children will be taking part in and their learning outcomes.*
- **The Hokey Cokey Tooth song** - *if you have time please help the children to learn this song.*
- **Pre-visit Letter** – *From the Eureka! team, to introduce the show to the children.*
- **Evaluation forms** *please complete and return to Jenny Parker, Play & Learning Manager at Eureka! The National Children's Museum, or email jenny.parker@eureka.org.uk*
- **Risk assessment** - *for the show. We advise you to make a preview visit to carry out your own risk assessment for the overall visit.*
- **A list of demonstrations used in the show** - *including resources needed and instructions in case you want to re-create any of the demos back in class.*
- **A copy of the re-cap quiz** - *which summarises the main learning outcomes of the show.*

From the Chew to the Poo! Learning Outcomes

Aims and objectives – by the end of this science show children should have learned:

- To recognise the organs of the body used in digestion.
- That the eatwell plate makes healthy eating much easier to understand by showing the types and proportions of foods we need to have a healthy and well balanced diet.
- To recognise the different types of teeth and what their function is.
- To know the roles the different body organs play in the digestive process.
- That our bodies absorb nutrients from the food we eat and how it gets rid of what we don't need.
- That it's important to eat foods which contain fibre, drink lots of water and take plenty of exercise to keep the digestive process running smoothly.

Overview: Through a series of interactive activities, powerpoint presentation and discussion, children will learn about the process of digestion by following the amazing journey of a banana and peanut butter sandwich from the moment it is chewed to the last moment it is pooped!

Activities	Learning Outcomes
Introduction of the idea that we'll be following the journey of banana and peanut butter sandwich through the digestion process.	<i>To show the different organs involved in the digestion process.</i>
Dissecting the sandwich to see if it is a healthy snack by using the eatwell plate.	<i>That a healthy and well balanced diet should include elements from each section of the eatwell plate.</i>
Step 1: the mouth. Children will talk about the different teeth and their functions and summarise by singing the Hokey Cokey Tooth song.	<i>That incisors are used for cutting our food; canines for tearing and molars for chewing.</i>
Volunteers are chosen to show the biting and chewing of food and how it is broken down to be swallowed.	<i>That saliva in our mouths moistens the food making it easier to chew and that enzymes in saliva break down the food so it can be swallowed.</i>
Step 2: swallowing. Children will watch a short video clip showing the x-ray of food being swallowed in the mouth.	<i>That the oesophagus is the tube which food travels from your throat to your stomach.</i>
Step 3: the stomach. Volunteers are chosen to help show the role of the stomach in the digestive process. This will be followed by a short discussion about what happens when we burp or vomit.	<i>That the stomach is a sack made of muscles that contract and churn food breaking it down even further by adding acidic digestive juices and enzymes.</i>
Step 4: the small intestine. Volunteers will demonstrate how long the small intestine is and how food is squeezed through it.	<i>That the small intestine is about 7m long. That food moves through the small intestine through a process called peristalsis and it's at this point that the body absorbs most of the nutrients it needs.</i>
Step 5: the large intestine. We'll show why you get diarrhoea and a volunteer will demonstrate the role of the large intestine by straining the excess water.	<i>That the role of the large intestine is to remove excess water after which what's left forms into a poo shape and is stored in your rectum.</i>
We'll talk about how your poo can be a good indicator of how healthy you are and why it's important to wash our hands after visiting the toilet.	<i>Children will learn how their diet and lifestyle can help the digestive process.</i>
Recap quiz - the whole audience will be asked to answer a number of questions.	<i>A quick summary of the main elements of the show and the digestion process.</i>

From the Chew to the Poo

Pre-visit letter

Eureka! The National Children's Museum
Discovery Road
Halifax
HX1 2NE

Dear friends

We just thought we'd drop you a quick line to say hello and to let you know that we're really looking forward to seeing you at Eureka! when we present to you our science show called 'From the Chew to the Poo!'

We'll leave it up to you to decide what you think the show might be about from its fun title but we can tell you that we'll be needing your help to show just how amazing your body is. We're sure you'll enjoy the show and hopefully you'll learn some new things too!

We'd really like it if you could learn our '*Hokey Cokey Tooth song*' before you arrive as we're not very brave singers! Your teacher should have a copy of the song for you to practice so we'll hopefully be able to raise the roof once we all get going!

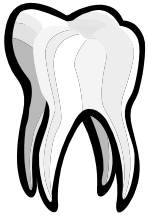
We look forward to meeting you all soon.

Yours sincerely

The Eureka! Team

From the Chew to the Poo

Pre-visit song



The Tooth Song

(To the vague tune of hokey cokey)

It's not your OUT-cisor, *(arm out)*

It's your IN-cisor, *(arm in).*

It cuts, cuts, cuts *(cutting action with hands)*

As your jaw opens *(arms wide)* and shuts *(snap arms shut)*

You taste food with your tongue *(tongue out)*

And it rolls about *(turn round)*

Then what do you do?

Ooooooh, you chew it with your molars, *(In to middle)*

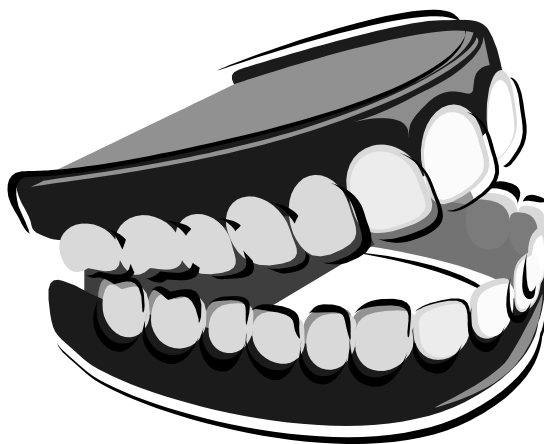
Ooooooh, you chew it with your molars, *(In to middle)*

Ooooooh, you chew it with your molars, *(In to middle)*

Cut, cut *(cutting action)*

Chew, chew *(chewing action with hands)*

Swallow it down *(sit on floor)*



From the Chew to the Poo Teacher Evaluation

Name of School: _____

Year Group: _____

Date of Visit: _____

1. Was this your first school visit to Eureka! (please circle) Yes No

2. Was the science show the main reason you decided to make a school booking?

(please circle) Yes No

If No, what was? _____

3. How did you find out about the science show?

4. What did you like about the science show?

5. Is there anything you think we could have done better?

6. How would you rate the science show?

	Excellent	Very good	Average/OK	Not very good	Poor
Presentation					
Content					
Learning opportunities					
Length					
Enjoyment					

Any comments?

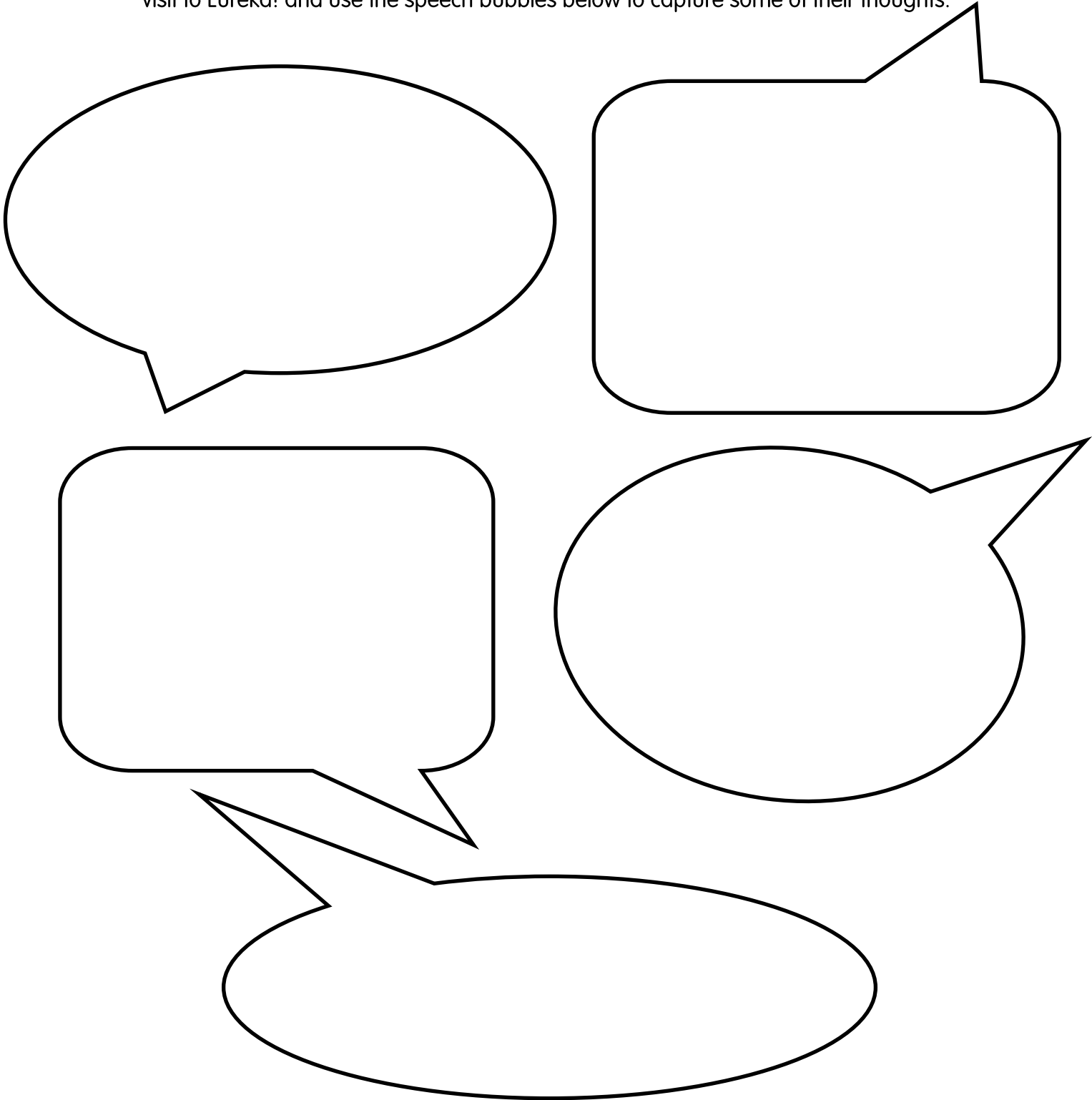
7. If there anything else you would like to tell us either about the science show or any other aspects of your visit, please use the reverse of this form.

Thank you for your comments. Please return to: Jenny Parker, Play & Learning Manager, Eureka! The National Children's Museum, Discovery Road, Halifax, HX1 2NE or email jenny.parker@eureka.org.uk

From the Chew to the Poo

Children's feedback

We'd love to hear what the children thought about the session too. As a follow-up activity the day after why not ask the children what they can remember about the science show and their visit to Eureka! and use the speech bubbles below to capture some of their thoughts.

The form contains five empty speech bubbles of various shapes and sizes, arranged in a grid-like fashion. The top row has two bubbles: a large oval on the left and a rounded rectangle on the right. The bottom row has two bubbles: a rounded rectangle on the left and a large oval on the right. A fifth, larger oval bubble is positioned at the bottom center, overlapping the bottom of the other two bubbles in the second row.

Comments made by children from:

_____ In Year _____

From the Chew to the Poo Risk Assessment

WORKPLACE RISK ASSESSMENT NUMBER:	ED 041	DATE :	Updated July 2015
LOCATION :	Studio theatre or Imagination Space		
OPERATION/PROCESS/ ACTIVITY :	From the Chew to the Poo science show	NOISE ASSESSMENT :	N/A
SUBSTANCES USED :	kitchen utensils; food colouring; vinegar; water; bicarbonate of soda; banana; brown bread; coffee; scissors	COSHH ASSESSMENT: (DANGEROUS MATERIALS)	N/A
MAIN HAZARDS IDENTIFIED :	Electric shock Slips, trips and falls Grazing of fingers on plastic knives		
OTHER POSSIBLE HAZARDS :	Fire		
EXPOSED PERSONS :	School groups and Eureka! staff		
FREQUENCY OF EXPOSURE :	Daily	LIKELY DURATION OF EXPOSURE :	Varied
CONTROL MEASURES (INSTRUCTION/INFORMATION/TRAINING/NEW PRACTICES) 1. Any trailing wires to be taped down or cable covers used; extension leads to be fully unwound before use; all equipment to be PAT tested before use. 2. Only Eureka! staff to operate any electrical equipment and to remain in close supervision of demos at all times. 3. Any scenery, props and resources to be set up to minimise hazards and placed at suitable distance from the audience. 4. Children shown how to use knives and potato mashers correctly. 5. Any spillages to be cleaned up immediately. 6. Fire exits to be kept clear at all times. 7. First aider on site at all times.			
MONITORING RESULTS:	Frequency : when significant changes occur Reported To : Facilities Manager/Health & Safety officer		
RISK ASSESSMENT :	Risk (probability) (0-10) x Hazard (severity) (0-10) = (0-100) (if all control measures are applied) $3 \times 5 = 15$		
ASSESSOR :	Jenny Parker	POSITION :	Play & Learning Manager

From the Chew to the Poo

Demos used in the show

Everything you'll see in our science show can be easily repeated in the classroom. The following pages provide a basic list of resources needed and instructions for each demonstration used in the show.

1: What happens in the mouth?

Equipment needed:

- a sandwich (we use banana but anything will do as long as it's quite easy to cut and mash up)
- a knife
- a potato masher
- a large bowl
- water (saliva)
- yellow food colouring (enzymes)

The demo:

1. Cut up the sandwich into smaller pieces using the knife to represent the incisors. Transfer the small pieces into the bowl, which represents the mouth.
2. Use the potato masher (as the molars) to chew and grind up the sandwich.
3. But this is quite difficult as the sandwich is too dry, so we add some water (the saliva) to moisten the food.
4. Contained in the saliva are enzymes which help speed the process up so yellow food colouring is also added at this point.
5. The sandwich is now easier to mix up and you should keep mashing until all the big lumps are gone.

2: What happens in the stomach?

Equipment needed:

- the mashed up mixture from the previous demonstration
- a zip-lock bag
- a spoon
- vinegar (stomach acids)
- washing up liquid (stomach enzymes)

The demo:

1. Transfer the mixture from the bowl into the zip-lock bag which will represent the stomach.
2. Add some vinegar to represent the stomach's digestive juices which are very acidic.
3. Add some washing up liquid to represent the digestion chemical enzymes which make it possible to digest the food.
4. Carefully seal the bag, making sure all of the air has been squeezed out.
5. Squeeze the bag to churn up the mixture just as the stomach muscles do.

3: What happens when we burp?

Equipment needed:

- vinegar
- bicarbonate of soda
- a small bottle with a cork stopper

The demo:

It's probably better if this demonstration is only carried out by an adult!

1. The bottle will represent the stomach, the bicarbonate of soda is the food and the vinegar represents the stomach acids.
2. Add a little bicarbonate of soda to the bottle.
3. Then pour in a little vinegar and quickly push the cork in - stand well back.

What happens:

The vinegar and the bicarbonate of soda will react and froth up. The build up of gas will cause the cork to pop off. This demo shows that another effect of adding acids and enzymes in the stomach is the production of gas. As acid mixes with food in your stomach it fizzes and produces gas. The gas collects at the top of your stomach until it needs to be expelled which is when you burp.

4: What happens in the small intestine?

Equipment needed:

- length of clear tubing sealed at one end (we got our polythene layflat tubing from www.transpack.co.uk)
- spoon
- wide necked funnel (or cut the top off a plastic bottle)
- a mixture of strong coffee (bile)

The demo:

1. Add the coffee mixture to the 'stomach' bag and give it a squeeze to mix it all up.
2. Carefully transfer this mixture from the bag into the tubing and seal the open end.
3. Use your hands to squeeze the mixture from one end of the tubing to the other just as the muscles in the small intestine contract and expand in peristalsis.
4. As the food passes through the small intestine, your body absorbs most of the nutrients it needs.

5: What happens in the large intestine?

Equipment needed:

- scissors
- large bowl
- sieve
- spoon

The demo:

1. Once all the nutrients have been absorbed by the bloodstream, what is left is mainly indigestible matter, water and bacteria. The job of the large intestine is to remove the excess water.
2. Place the sieve over the bowl. Cut one end of the tube and squeeze the mixture into the sieve.
3. Use the spoon to press the water out, keep pressing so that eventually what you're left with is a mixture which is firm enough to be moulded. It's up to you whether or not you choose to mould it into a poo shape!

From the Chew to the Poo

Recap quiz

1. *Where does the process of digestion begin?*

- a) in your stomach
- b) in your mouth
- c) in your intestine

2. *The tube through which your food travels from your throat to your stomach is called?*

- a) the oesophagus
- b) the small intestine
- c) the epiglottis

3. *The muscular bag that starts to churn up your food is called?*

- a) the liver
- b) the pancreas
- c) the stomach

4. *When the muscles in the small intestine expand and contract to push the food along this process is called?*

- a) peristalsis
- b) digestion
- c) absorption

5. *What is the job of the large intestine?*

- a) to churn up your food
- b) to absorb nutrients
- c) to remove excess water

6. *What will help you to have the perfect poo?*

- a) exercise,
- b) a diet full of fibre
- c) lots of water
- d) all of the above!