

Lesson 4: Our sense of taste

Children will learn to: understand the role of taste buds in our experience of eating food; identify four basic tastes and relate them to different parts of our tongue; carry out a tasting experiment

Main outcome: Children write up the tasting experiment

Cognitive skills: predicting, comparing, contrasting, hypothesising, experimenting, explaining

Main language: *What ...? Where ...? How ...? How many ...? How often ...? You taste ... things on the ... of our tongue. We think ... are ... / ... identified / didn't identify ... when he/she wore ... / held ... helps ...*

Main vocabulary: *taste, food, bitter, salty, sweet, sour, tongue, front, back, sides, middle, taste buds, sensory organ, sensitive, microscopic, hair, roof, mouth, lips, cheek, message, brain, sense, see, sight, smell, experiment, hypothesis, results, conclusion, blindfold, nose, chocolate, crisps, cake, pop corn, lemon, vinegar, coffee, raw onion*

Materials: Worksheet 1: Taste buds question circuit (cut into strips, one strip for each child or pair); Worksheet 2: Our tongue and a tasting experiment (copy for each child); sheets of paper for children to write up their experiment (one for each child); small hand mirror(s) (optional); small pieces of cut up fruit in plastic cups (e.g. a selection of two or more of apple, banana, peach, pear, melon); blindfolds (one for each group)

Revision activity

- Ask *In what ways are fruit different? (where they grow: temperate, subtropical, tropical; how they grow: on trees, bushes, the ground; size, colour, shape and type of seeds) / What parts of plants are vegetables from? (roots, bulbs, flowers, fruits, stems, seeds, leaves)* and listen to the children's response.
- Say one or two riddles based on fruit or vegetables, e.g. *It's round and red. It's the fruit of the plant but we think of it as a vegetable. We cook it or eat it raw (tomato). / It's a subtropical fruit. It's small and green. It grows on a climbing plant (kiwi).* Children name the fruit or vegetables.
- Divide the class into pairs. Children choose a fruit or vegetable and invent and write a similar riddle with their partner. The pairs then take turns to say their riddles to the class and identify the fruit or vegetable.

Introduction and setting objectives

- Explain that all food has a taste or flavour. We either enjoy or don't enjoy eating different food depending on whether or not we like the taste or flavour. Ask e.g. *What do strawberries taste like? (sweet) What do lemons taste like? (sour) What does coffee taste like? (bitter) What do crisps taste like? (salty).* Use the children's answers to introduce or revise the words to describe basic tastes.
- Say *In this lesson we're going to learn about how we taste food. We're also going to identify*

different tastes and relate them to parts of our tongue. We're also going to do a tasting experiment and write about the experiment for our e-zines (or magazines).

Suggested lesson procedure

Activity 1

- Ask the children *What part of our body do we use to taste food? (our tongue).* If you have small mirrors available, pass these around and get the children to look closely at their tongues in the mirror.
- Ask *What do you notice about your tongue?* and listen to the children's response. Re-cast their answers and use this as an opportunity to introduce vocabulary, e.g. *pink, pale, saliva, spots or bumps.*
- Explain that the little spots or bumps on the children's tongues are called *papillae* and that the papillae contain our taste buds. Our taste buds are what we use to taste food. Our taste buds have very tiny and sensitive microscopic hairs. When we eat food, it is broken down in our mouth and mixes with saliva. The microscopic hairs of our taste buds then send messages to our brain so that we recognize the taste of the food we are eating and can identify whether it is sweet, salty, bitter or sour.
- Explain that some parts of the tongue are more sensitive to different tastes than others.
- Draw the shape of a tongue on the board. Elicit or pre-teach the words *front, back, middle* and *sides*.

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Ask questions to encourage children to predict the parts of their tongue which are most sensitive to different tastes, e.g. *Which part of the tongue do you think is most sensitive to sweet tastes? (e.g. the front / the back / the sides / the middle).*

Activity 2

- Say *Let's do an activity and find out more about the role of taste buds and which parts of our tongue are most sensitive to different tastes.*
- Give out a strip of paper (cut from Worksheet 1) to each child or pair, depending on the size of the class. Remember who you give the first strip on the Worksheet to (marked with an arrow), as this child or pair will start the activity. All of the remaining strips should be given out randomly.
- Explain that on the left of the strip children have a question and on the right of the strip they have the answer to somebody else's question.
- Explain and demonstrate that one child (the child with the first strip from the Worksheet) should read out their question to the class. The rest of the class should listen. The child or pair with the answer to the question on their strip of paper then reads this to the class and asks the next question on the left of their strip. The 'circuit' continues in the same way until all the questions and answers have been read out.
- At the end, compare the parts of the tongue which are most sensitive to different tastes (the front: sweet, salty; the sides: sour; the back: bitter) with the children's predictions. Explain that we have fewer taste buds in the middle of our tongues.
- Ask children further questions based on the 'circuit', e.g. *How many taste buds do we have? (about 10,000) How often are they replaced? (about every two weeks).*

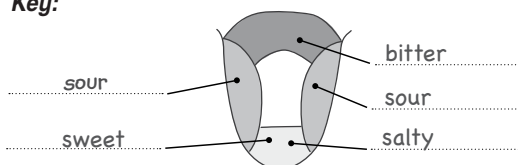
- Redistribute the strips of paper (again remembering which child or pair should start) and repeat the activity.
- Ask individual children to take turns to reconstruct orally what they have learnt about our sense of taste from the question circuit. Be ready to prompt and help children do this as necessary.

Activity 3

- Give a copy of Worksheet 2 to each child.
- Say *Look at the parts of the tongue* and elicit sentences, e.g. *You taste sweet things on the front of your tongue.*

- Say *Label the parts of the tongue.* Give children time to do this and check the answers.

Key:



- Divide the class into pairs. Say *Look and classify the food according to whether it tastes sweet, salty, bitter or sour.*
- Children work with their partner and classify the food.
- Check the answers with the whole class, e.g. *We think crisps are salty. / We think lemons are sour.* (Be ready to explain that popcorn could be sweet or salty.)
- Elicit other possible foods to go in each group, e.g. sweet: biscuits, apples; salty: hamburgers, chips; bitter: (some) olives, endives; sour: grapefruit, lime. Children add one more food of their choice to each column.
- At the end, clarify that we taste food with all the taste buds on our tongues, and also the ones on the roof of our mouths, the insides of our cheeks and lips. The diagram of the tongue simply shows where our taste buds seem to be most sensitive to different tastes. If appropriate, also be ready to explain that some people talk about five basic tastes rather than four. The fifth taste is called 'umami' and refers to savoury or spicy foods which have either natural glutamates or the food additive monosodium glutamate. Umami is a particularly popular taste in some Asian cultures.

Key:

sweet	salty	bitter	sour
chocolate	crisps	coffee	lemon
cake	popcorn	raw onion	vinegar

Activity 4

- Refer back to the question circuit and ask *What other senses help you identify food? (Your senses of smell and sight) What happens if you can't see or smell the food you're eating? (It's difficult to recognize the food).*

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- Say *Let's do an experiment and find out whether this is true or not.* (Be sure you have checked that there are no children in the class with food allergies before doing the activity).
 - Ask the children what they think, e.g. *We think our senses of smell and sight help us to identify food.* Explain that this is their hypothesis and that the experiment will prove whether they are right or wrong.
 - Divide the class into groups of four children. Hand out plastic cups containing the fruit you have selected and blindfolds to each group. Assign a leader in each group to be responsible for the blindfolds and plastic cups of fruit.
 - Draw the children's attention to the table for the experiment. Get them to write in the names of the children in their group in the spaces provided.
 - Explain that each child in the group should have two turns at tasting different pieces of fruit without knowing what it is. Before they taste the first piece of fruit they should put on the blindfold so they can't see the fruit. Before they taste the second piece of fruit they should put on the blindfold and hold their nose so they can't see or smell the fruit. Other children in the group should take turns to give each other the fruit to taste and complete the table with ticks (✓), if the child guesses the fruit correctly, and crosses (✗) if not.
 - Demonstrate doing the experiment with one child at the front of the class.
 - Children work in their groups and do the experiment.
 - At the end, ask the different groups to report back on their results. Be ready to teach the children a sentence pattern to be able to do this, e.g. *Marta identified the fruit correctly when she wore the blindfold. / Marta didn't identify the fruit correctly when she wore the blindfold and held her nose.*
 - Elicit the general conclusion of the experiment, e.g. *Our senses of smell and sight help us to identify food.* Depending on the fruit children have used in the experiment, be ready also to add, e.g. *Our sense of touch (i.e. recognizing the texture of food) also helps us to know the food we are eating.*
- Activity 5**
- Divide the class into their project groups. Explain that you want them to write up their tasting experiment for their e-zine (or magazine).
- Establish a template for the children to do this and write this on the board, e.g.
- Tasting experiment
- Hypothesis:
- Materials we used:
- What we did (procedure):
- Results (including the completed table from the Worksheet):
- Conclusion:
- Work through an example orally before the children begin. Write any sentence patterns children will need to write up the experiment on the board (see earlier in the activity for examples of how to describe the hypothesis, results and conclusion). For the procedure, children can write, e.g. *Everyone in the group tasted two pieces of fruit and tried to identify them. The first time they wore a blindfold. The second time they wore a blindfold and held their nose. Their answers were recorded in a table.*
 - Give out pieces of paper (one to each child). Children work with their group and write up their experiment. Alternatively, they can use computers to do this. Children can optionally add drawings or photos to illustrate their experiments. These can be completed either as homework or in a follow-up lesson as necessary.
- Learning review**
- Briefly review learning by asking the children *What have we done today? What have you learnt? How did the question circuit help you learn about taste buds? How did the tasting experiment help you learn about our sense of taste? What did you enjoy most / find most interesting / difficult?*
- Optional extra**
- Children do another experiment to find out whether different parts of their tongue are sensitive to different tastes: sweet, salty and sour. (Be sure you have checked that there are no children in the class with food allergies before doing the activity).

Prepare small liquid solutions of sugary water, salty water and lemony water in plastic cups. Have ready a packet of cotton buds. Conduct the experiment with individual children at the front of the class. Dip a cotton bud lightly in one of the solutions and put it first on the

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front and then on one side of the child's tongue. Ask them to identify the taste and on which part of their tongue they notice the taste most intensely. Keep a record of children's responses on the board. Talk about the results and draw conclusions as previously. (Note: This experiment does not include 'bitter' as most bitter tastes are unsuitable for children and putting a cotton bud on the back of children's tongues could cause sickness).

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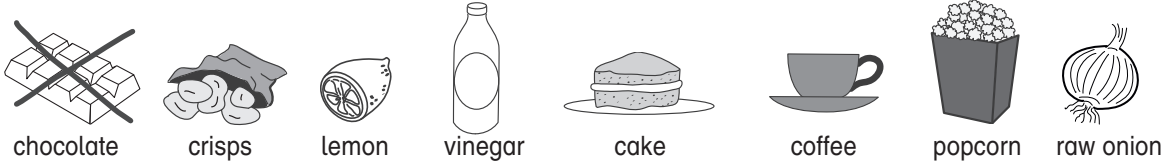
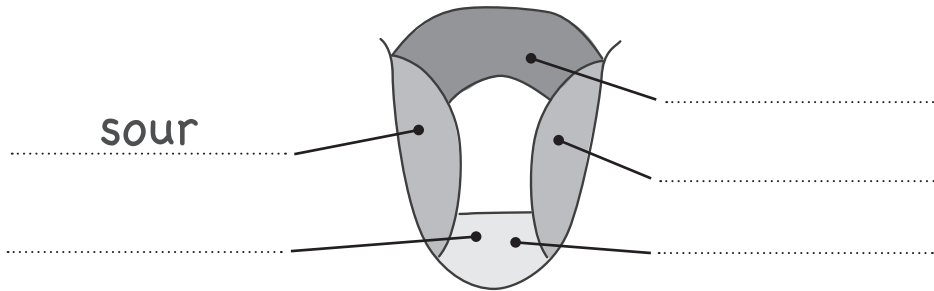
→ How do you taste food?	It's difficult to recognize the food.
What are your taste buds?	You taste food using your taste buds.
Where are your taste buds?	Your taste buds are tiny sensory organs with sensitive microscopic hairs.
Do you have taste buds anywhere else?	Your taste buds are on your tongue.
How many taste buds do you have?	Yes, you do. On the roof of your mouth, your lips and inside your cheeks.
Do your taste buds get replaced?	You have about 10,000 taste buds.
What do the hairs on your taste buds do?	Yes, they do. They get replaced about every two weeks.
What basic tastes do your taste buds recognize?	The hairs on your taste buds send messages to your brain so that you know how something tastes.
Where do you taste sweet things?	The basic tastes your taste buds recognize are sweet, salty, sour and bitter.
Where do you taste salty things?	You taste sweet things on the front of your tongue.
Where do you taste sour things?	You taste salty things on the front of your tongue.
Where do you taste bitter things?	You taste sour things on the sides of your tongue.
What other senses help you identify food?	You taste bitter things on the back of your tongue.
What happens if you can't see or smell the food you're eating?	Your senses of smell and sight.



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1. Label the tongue and classify the food. Add one more food to each column.

sweet ~~sour~~ salty sour bitter



sweet	salty	bitter	sour
chocolate			

2. Do the tasting experiment. Find out how your senses help you identify food.

Names of children in group	eye	nose	eye	nose

3. Write about your experiment.