

Taste and Smell: Teacher's topic guide

God is Protector Year 4

Spiritual overview

God has created foods for us to enjoy that not only smell and taste delicious, but also provide nourishment for our bodies. God has provided us with the sense of taste and smell, not only for pleasure, but also as a way of protecting us from foods and gases that may be harmful. If we smell gas from the gas stove, then we know there is a gas leak and we must get away from it, into fresh air. We can taste and smell when food has gone off, and we should not eat it. Spoiled food contains bacteria that can make us sick.

Outcomes: Students will

- understand the role of taste and smell in protection.
- understand the role of taste buds and their ability to adapt to tastes.
- classify, compare and identify tastes of foods – sweet, salty, bitter, sour.
- identify smells.
- explain the different areas of the tongue responsible for different tastes.
- explain the connection between taste and smell.
- understand the protection in the ability to smell.
- Understand that we can protect ourselves from sickness by eating healthy food.

Bible references

Exodus 15:22-27 Bitter water made sweet. As the Israelites were crossing the desert, God provided water for them by turning the bitter water to sweet, drinkable water. Their sense of *taste* told them that the water was bitter or sweet.

James 3:5-6 The tongue not only detects taste, but can be responsible for sweet words or bitter words.

Psalms 34:8 Taste and see that the Lord is good.

Discussion:

What is a 'main meal' and when do we eat it?

What do you like about family meal times?

Why is it better to eat at the table rather than in front of the TV?

What do we mean by a balanced meal?

What are your family favourites?

What are 'processed' and 'unprocessed' foods?

Activities

Sweet, salty or sour?

Ask the students how they would describe the tastes of these foods: lemon; soy sauce, mango?

Play the taste game

Prepare a plate of different fruits. Include both sweet and sour fruits. Cut the fruit into pieces and put a toothpick into each piece. Ask a few students to volunteer to taste and identifying the fruit while blindfolded. Ask how the fruit tasted: sweet or sour?

Classify tastes

Make a list of sweet fruits (most fruits) and sour fruits (lemon, lime, grapefruit) Think of other foods that taste: salty and bitter. Bitter foods are sometimes hard to think of. They include coffee, black tea, unsweetened dark chocolate, some bitter herbs.

Make a taste chart

Children cut an A4 piece of paper into the shape of a tongue. Then fold the piece of paper into quarters. Label the sections: sweet, sour, salty, bitter. Different foods can be drawn or cut and pasted into the right taste sections.

Play the smell game

Collect samples of things that smell – e.g. perfume, vinegar, disinfectant, lemon, orange. Children take turns of guessing the smells while blindfolded.

Play the taste-smell game

While blindfolded, children taste some fruits or salad vegetables while holding their nose. Ask:

“Can you taste the food?”

“What does this show us?”

“Why do you sometimes lose your sense of taste when you have a cold?”

Try a new vegetable

Encourage children to try a vegetable that they have not tried before. Perhaps they could visit the market with their parents on the week-end.

Draw your vegetables

Children can draw/write the names of all the vegetables they have tried, and write about the tastes and smells.

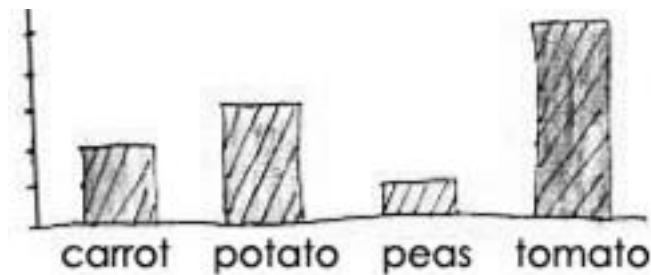
1. My new vegetable is.....It tastes...
2. My favourite vegetable is.....

Take a survey of favourite vegetables. Graph the results.
You can do the same with fruits.

To make a bar graph:

- Ask children to choose their favourite vegetables or fruits.
- Go through the class list and record favourite fruit next to each name.
- Collate data. e.g. 5 children chose apples, 6 children chose oranges etc.
- Record data in graph form by drawing a large grid.
- Write the names of favourite fruits across the bottom of the page, one fruit/vegetable per square.
- Write numbers going up the left-hand side of the page.

- Draw a bar to show how many children chose the favourite fruits/vegetables.



Our favourite vegetables

Classify foods according to plant or animal

Take a piece of paper and make two columns: food from plants and food from animals. Make a list of healthy foods in each group.

Draw a healthy main meal

Children can draw around a dinner plate and draw a healthy meal inside the circle or alternatively, draw a meal on a paper plate.

Discussion:

What makes a healthy breakfast?

List and draw a healthy breakfast

Children can divide the paper into two columns. On one side, list or draw their usual breakfast. On the other side, they list or draw their ideal breakfast. (What changes could be made to make the breakfast healthier or more balanced?)

Make a place mat with a healthy food design.

Design a healthy school lunch

Discuss some different kinds of healthy foods to be included. Encourage children to think of some more unusual foods like raw vegetables and home-made foods.

Discussion: snack foods

What are some healthy snack foods?

What are some not-so-healthy snack foods?

When should we snack, and what is wrong with snacking for a long time? e.g. snacking while watching TV and snacking from the time we get home from school until dinner time.

Values education Year 4

God is Protector

Keeping safe

To keep ourselves safe we need to ...

- ask God to protect us every day.
- show wisdom in behaving safely.
- care about the safety of others.

Discussion and activities

1. Who helps you to keep safe? (parents, teachers, police, government laws)
2. How can you help yourself to keep safe?
3. Make a list of safety rules for keeping safe:
 1. at home
 2. walking in a place where there is traffic
 3. when Swimming

Bible passages

Proverbs 28:26 Those who walk in wisdom are kept safe.

Proverbs 18:10 The name of the Lord is a strong tower; the righteous run into it and are safe.

Bible stories: Daniel in the Lion's den; Shadrach, Meshack and Abednego were kept safe in the fiery furnace.

Practical Science Year 4

God is Protector

Topic: Taste and smell

Describe how things feel

Make a collection of things that feel different when we touch them:

Examples:

Sticks

Stones

Cloth

Ice

Cotton wool

Plastic

Metal

Sandpaper

Find words to describe each of these.

Make a classification table.

Make this into a bar graph.

hair	pineapple					
face	sandpaper	mango		metal	silk	finger paint
cotton	stick	stone	face	Ice	plastic	Jelly
Soft	rough	smooth	warm	cold	slippery	slimy

Practical Science Year 4

Topic: Taste and smell

Taste Testing Without Smell

<http://www.sciencekids.co.nz/experiments/smelltaste.html>

We all know that some foods taste better than others but what gives us the ability to experience all these unique flavours? This simple experiment shows that there's a lot more to taste than you might have first thought.

What you'll need:

- A small piece of peeled potato
- A small piece of peeled apple (same shape as the potato so you can't tell the difference)

Instructions:

1. Close your eyes and mix up the piece of potato and the piece of apple so you don't know which is which.
2. Hold your nose and eat each piece, can you tell the difference?

What's happening?

Holding your nose while tasting the potato and apple makes it hard to tell the difference between the two. Your nose and mouth are connected through the same airway which means that you taste and smell foods at the same time. Your sense of taste can recognize salty, sweet, bitter and sour but when you combine this with your sense of smell you can recognize many other individual 'tastes'. Take away your smell (and sight) and you limit your brain's ability to tell the difference between certain foods.

Practical Science Year 4

Topic: Taste and smell

Test your taste buds

What you need

- 4 cups of water
- ice-block sticks (or cotton buds)
- Lemon juice
- Salt
- Sugar
- Someone to do the taste test

Instructions

1. Dissolve sugar crystals into one cup, salt into another cup and pour lemon juice into a third cup.
2. Leave the fourth cup as a 'control', i.e. something you can compare against.
3. Mix a wooden ice-block stick through one solution and place it on the tip of your tongue.
4. Record the taste i.e. salty, bitter, sweet, no taste. Wash your mouth out with pure water.
5. Now repeat steps 3 and 4 for the back, sides and middle of your tongue.

Were there areas of the tongue that didn't strongly sense the taste?

Now repeat the steps 3, 4 and 5 for the other solutions.

What were your results?

Extension activity:

Now try blind folding a friend. Can they tell which solution is which?

Saved From the Sea

Biography

A true story told by Colin Marsland of South Australia

Schnapper fish live in the seas around Australia and New Zealand, and are excellent for eating. In December the Schnapper are plentiful. Each year Colin and his cousin would go on a camping trip with their boats, to catch fish.

They began fishing early in the morning. This day the waters were calm and clear, but by 9 am the wind began to get stronger and by 10 am they decided they should set out again for shore.

By this time the wind was near gale force, so Colin reefed down his main sail and began running before the wind, heading for the shore. He had only been under way a few minutes when he heard the eerie hissing of a freak wave about to break over him. In a moment the boat was filled with water. The boat slewed against the seas and immediately went down by the stern. In a matter of seconds only the bowsprit was visible. Colin was flung out of the boat. Filled with a dreadful fear, he screamed out to God, above the howling wind. Immediately, he was conscious of a wonderful peace of mind and the feeling of the power of God.

For two hours Colin clung to the boat, which was reasonably air-tight, kept afloat by an airlock in the bow. He had hoped that the wind and swell of the waves would carry the boat towards the shore. But he realized that an under-current was carrying him further out to the open sea. Finally, he decided to remove his clothes and try to swim to the shore, since by this time the boat was beginning to slowly sink.

Colin had never swum any distance and only considered himself a good 50-metre swimmer. He doubted if he could reach the shore under these extremely difficult circumstances. But he kept thinking of his wife and daughter and would not give up the fight. With an unusual feeling of great strength and power in his body he noted a land-mark on the shore and set out to swim towards it. The crest of each wave gave him a glimpse of the coast line gradually drawing nearer, and by the time he was half-way there he knew in his heart that he was going to reach the shore.

Suddenly his heart sank. Quite close by he noticed a dorsal fin. Sharks are always often seen in these waters at that time of year, because they love schnapper and often take them off a fishing line. He remembered the time a huge, hungry eighteen-footer attacked my boat. It reared itself out of the water and snapped at the side of the boat, only a metre from where he was standing. He could see straight into its great jaws with its rows of evil-looking teeth. It left its teeth marks on the water line of the boat, and one of its teeth was left embedded in the timber.

So you can imagine his relief when I realized that the dorsal fin belonged to a friendly dolphin. Colin was greatly comforted for some distance by three dolphins that swam with him. He firmly believed that the dolphins helped to save his life. Sharks do not come near to where dolphins are.

As he neared the coast, he could see the great waves breaking over the reefs in a long, white line. Colin knew he could be dashed to death on them; but eventually he

found himself in calmer water beyond the reefs. Then, to his relief, a wave swept him up on to a patch of golden sand.

However, the same wave that brought him in also swept him out again. He had completely lost the use of his legs, so that each time a wave carried him up on shore, the powerful under-tow drew him back again into the water. Colin began to panic. Had he been saved from the reef only to be drowned in the shallow water? But in that moment of panic he received a clear thought from God. "Dig your elbows into the sand and this will hold you against the tremendous strength of the under-tow." As he obeyed that instruction, each wave carried him further up the beach, until he was out of the water. There he lay for a full hour in the baking sun. He was safe at last, three hours after leaving the boat.

After regaining some strength in his legs, he set out on a seven-mile trek along the beach to their camp, two and a half hours later. You can imagine the reaction of his cousin and our other fishermen friends when they saw him alive. They had kept been watching and searching the coast-line for Colin. They had given up hope of ever seeing him alive again.

They gave him clothing, food and hot drinks and took him home to his wife and daughter. After recovering from his ordeal Colin returned from the place where he had been swept ashore, because he could not understand how he had escaped being dashed to death on the reefs. Colin discovered that he had been guided through the narrow gap, only 7 metres wide, which was the only break in the reef on that particular part of the coast. He knew that God, who gave him the super-natural power in his body to swim to the shore, had also guided him to the one gap in the reef where he could swim through safely.

A week later, after recovering the use of his legs, the local fishermen asked Colin if he knew where his boat had sunk. It had not been washed ashore, and there was no sign of any wreckage along the shore, so it was assumed it was still out there where it had sunk.

A few days later, thirty fishermen in twenty-two boats formed a line, each towing small grappling hooks and schnapper lines in the area where Colin was clinging to his boat. The boats moved forward together dragging the lines in the hope of striking the boat. On the very first run a schnapper line hooked the boat! Excitedly, the men worked together to raise the boat to the surface. Imagine our surprise when we found that the schnapper hook had caught in a small ring on the very tip of the mast! How amazed they were at this further miracle of God. There was no damage to the hull at all, except that a little paint had scraped off.

Up to the time of Colin's ordeal, he was not concerned about God. He knew God was "out there somewhere", but did not know Him personally. Yet God cared for Colin and heard his desperate cry for help. That adventure changed his life. Colin decided that if God cared enough for him, to not only save his life and his boat, but enough to send His Son, Jesus, to save us for eternity, then he wanted to love and serve Him for the rest of his days.

Activities – Saved from the sea

PART A

1. When was the schnapper season?
2. Who was fishing with Colin?
3. What did Colin do when his boat went down?
4. How was he kept afloat?
5. Why did he decide to swim for the shore?
6. Why was the presence of dolphins a good sign?
7. Explain several ways in which God showed his care and protection.
8. How did this adventure change Colin's life?

PART B - God is protector

Read:

God knows everyone in the world by name. He even loves those who do not love Him. He wants everyone to come to know Him. Sometimes God does special miracles for people who do not know Him. The way in which God protected this fisherman was a miracle. It made him understand that God is real, and cares for each one of us.

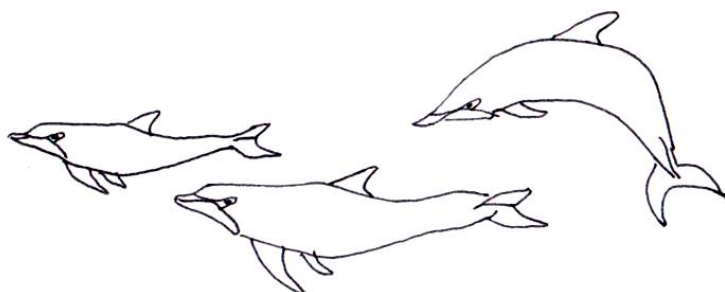
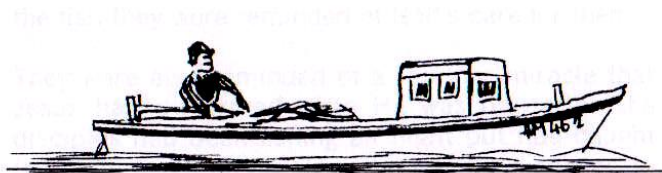
Copy and fill in the missing words:

How do I know that God loves and cares for me?

The _____ tells me that He does.

When I make Jesus my _____ I can feel His love.

Missing words: friend Bible



Five senses: taste and smell 1

Taste and smell facts

Student activities

Name two of your favourite tastes.

Name two of your favourite smells.

This is how does our body give us a sense of taste or smell.

The nose contains millions of little cells called *receptors*. A receptor is part of a *nerve*. Nerves are like very thin threads that carry messages to the brain.

The receptors in the nose are found in the tiny hairs inside the nose. They recognize particles in the air and tell the brain about it. That is when we smell something.

There are sweet smells, delicious smells and bad smells.

What smells sweet?

What smells delicious?

What smells bad?

Sometimes smells can tell us that there is something wrong. Perhaps the food smells “off”. Then we know not to eat it. Perhaps there is a smell of gas. It may be a leak of poisonous gas. Our nose tells us to get out of the room or else the gas will make us sick. This is the protection God has given us through our nose.

How does our sense of smell protect us?

How does our sense of taste protect us?

Five senses: taste and smell 2

Taste buds

There are four kinds of tastes: sweet, sour, bitter, salty.

Taste is when you can tell the flavor of food and how nice the food tastes. Taste gives you signals of dangerous gases and toxic food. All over your tongue, there are little bumps called taste buds. There are four different types of **taste buds**: sweet, sour, bitter, salty.

You can taste:

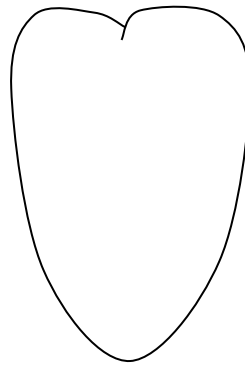
sweet things in the front of your tongue
sour things at both sides of your tongue
bitter things at the back of your tongue
salty things all over your tongue

Name a food that tastes sweet.

Name a food that tastes sour.

Name a food that tastes bitter.

Name a food that tastes salty.



Label the parts of the tongue.

Draw the tongue and draw arrows to the different parts. Also write the different kinds of taste.

tip: sweet

sides: sour

back: bitter

What part of the tongue allows us to taste salty foods?

Five senses: taste and smell 3

Getting used to tastes and smells

Did you know that taste buds and smell receptors have the ability to *adapt*. 'Adapt' means 'to get used to something'. This means that when you first taste something new, the taste or smell may be very strong. But the more you taste that food, it becomes not so strong. This is very important to remember when trying new foods. At first you may think. "Oh no, I could never eat that!" But keep trying it, and before long your taste buds will adapt.

Indian food is very spicy. Even young Indian children eat very spicy food. If you tasted it for the first time, you would probably think this food is far too spicy for you. This is not because Indian children have different taste buds to everyone else. It is because they have adapted, or got used to spicy food.

Sadly, there are some children who think they cannot accept the taste of fruits and vegetables. This is because they have been allowed to eat mostly junk food. Can you imagine that! Some children have never even tried vegetables. If they were to try them, at first their taste buds would tell them that these foods are far too strong.

1. Where are your taste buds?
2. How would hot curry taste if you had never tasted it before?
3. How could you help a child who does not eat fruits and vegetables? What would you say to them?
4. Name a new healthy food that you would like to try.

Five senses: taste and smell 4

Taste and smell work together

Our sense of taste and sense of smell are very similar. In fact, they work together. The receptors we use for tasting are found mostly on the tongue, and some in the roof of the mouth. Taste buds are connected to nerves that send messages to the brain. When the brain receives the message, we "taste" something.

Our sense of taste protects us from eating food that has gone "off". Our taste buds can also protect us from eating things that are poisonous. If something tastes unusual then we shouldn't eat it.

1. Why is it important to be able to smell?
2. Why is it important to be able to taste?
3. What happens to your sense of taste when you hold your nose?
4. What happens to your sense of taste when your nose is blocked from a cold?
5. Which foods smell delicious to you?