



Interactive PowerPoints for AQA GCSE Food Preparation and Nutrition

**POWERPOINT
SLIDES AND
TEACHER NOTES**

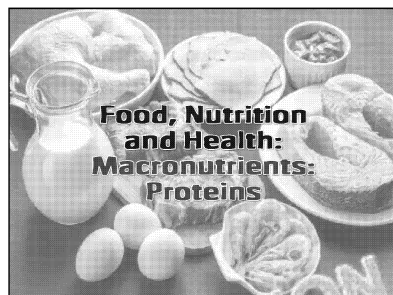
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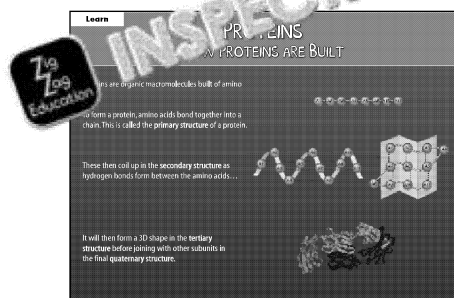
3.2.1 Macronutrients

PowerPoint 1: Proteins

Slide 1

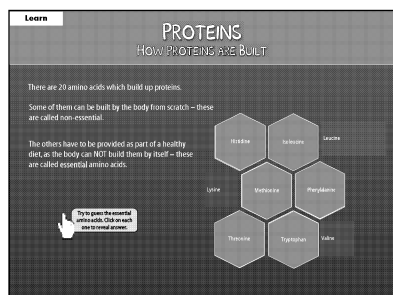


Slide 2



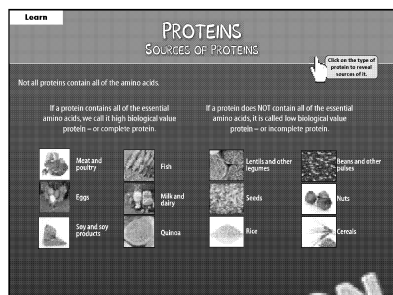
- Click through to reveal
- Discuss with students what they have learnt for their exam but make sure that the chemical structure is covered later on in the Food Science

Slide 3



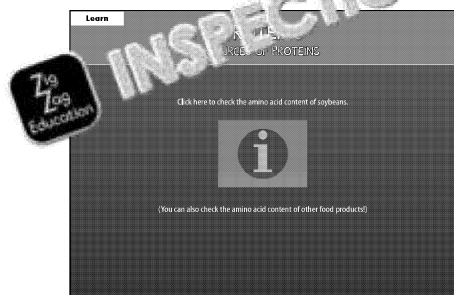
- Introduce essential amino acids
- Click on each hexagon to reveal the name of the amino acid

Slide 4



- Click on the name of the food source to reveal the source of the protein.

Slide 5



- Students can compare the protein content (score) in various food sources

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Slide 6

Learn

PROTEINS

PROTEIN COMPLEMENTATION

Foods which contain low biological value (LBV) proteins can be consumed together to form a high biological value (HBV) meal.

LBV protein1 + LBV protein2 = HBV meal

For example...

Baked beans (legumes) + Toast (wheat)

On their own they are considered low biological value proteins as they don't have all the essential amino acids, but combine them and they do!

Can you think of any more examples?

- Students should provide examples of foods that are eaten every day and how protein complementation techniques can be used.

Slide 7

Learn

PROTEINS

PROTEIN ALTERNATIVES

Some people may choose not to eat meat or other animal-derived foods, such as eggs, milk or dairy products. People who do not eat meat, but eat milk, eggs or dairy, are called vegetarians. There are various groups of vegetarians.

Lacto-vegetarians
Eat dairy products, but not eggs.

Lacto-ovo-vegetarians
Eat both dairy products and eggs (but not meat).

Ovo-vegetarians
Eat eggs, but not dairy products.

Vegetarians do not eat meat, but they may eat fish, eggs, milk or dairy products.

Find out how to be healthy as a vegetarian.

- Students learn the different types of vegetarians and vegetarian diets.

Slide 8

Learn

PROTEINS

PROTEIN ALTERNATIVES

To balance their diet and provide HBV proteins, vegetarians and vegans choose to eat protein alternatives. Protein alternatives are foods which are rich in HBV protein and which are made of plants. Some examples include:

Soya

- Soybeans are a very rich source of HBV protein.
- They are used to produce various products, such as soy milk, soy oil, soy flour or soy sauce.

Mycoprotein

- Mycoprotein was invented in the 1960s as a remedy for meat shortages in Britain.
- It is produced by a fungus, *Fusarium venenatum*.
- Mycoprotein is mixed with egg and seasoning to make 'Quorn'.

Tofu

- When you soak and press soybeans, you obtain soy milk.
- By coagulating soy milk (with gypsum, acids or enzymes) and draining it, you can obtain tofu.
- Tofu is a bean curd and depending on how much water was drained from it, it can be silky and creamy or hard and crumbly.

Textured vegetable protein

- Soybeans can be pressed to extract oil – the leftover residue is used to produce textured vegetable protein (TVP), which is a good source of HBV protein and is low in fat.
- You may know this as 'TVP', 'soy chunks' or 'soy meat'.

- Click on each title to reveal more information about protein alternatives.
- Students should consider the health benefits of protein alternatives.

Slide 9

Learn

PROTEINS

FUNCTIONS OF PROTEINS

Proteins are important for a number of reasons.

- They build all of the cells in our body.
- They enable growth and repair of tissues and the whole body.
- They build hormones, which conduct information and control processes around the body.
- They build enzymes, which make digestion possible.
- They build antibodies, which defend us from microbes.
- They are a secondary source of energy, which means that they can be used in times of famine to keep the body going.
- They regulate the pressure in blood vessels, preventing our limbs from swelling.

- See whether students can identify the functions of proteins from the images as prompts.
- Click on each image to reveal the function of proteins.

Slide 10

Learn

PROTEINS

PROTEIN DEFICIENCY

So what would happen if you ate too little protein...?

- You would lose weight and stop growing** ... because you would not be able to build new tissues or repair the old ones.
- You would become malnourished** because your digestive system would not be able to break down food to absorb it into your bloodstream.
- You would be weaker** ... because your muscles are built of two types of protein, so not eating enough would prevent the building of new muscles and the repair of old ones.
- Your immune system would be weakened** ... because proteins are needed to build up the body's defences.
- Excess protein in the diet causes a disease called kwashiorkor.**

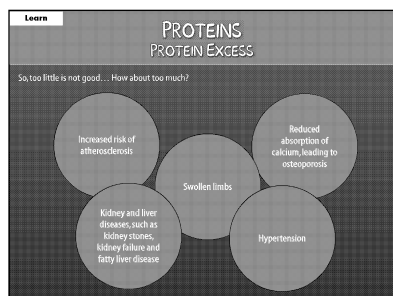
- Students should write down the symptoms of protein deficiency on a piece of paper and then discuss their answers.

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Slide 11



- Use the pictures as prompts to discuss the effects of protein excess
- Students should write notes on a piece of paper and discuss. Click on each picture to reveal the answer.

Slide 12

Learn

PROTEINS

DIETARY REFERENCE VALUE

So how much protein do I need to eat to be healthy?

10-15% of a healthy person's daily energy intake should consist of proteins. 1 gram of protein provides 4 kcal of energy.

This means that an adult male should eat 95 g of protein a day, while an adult female should eat around 75 g of protein a day.

To make it easier, you can eat one gram of protein per kilogram of your body mass.

Pregnant and lactating women, athletes and older people have higher protein requirements.

- For an adult male the recommended calorie intake is 2,500 kcal per day. For an adult female it is 2,000 kcal per day.
- Discuss how this may vary for pregnant, and for different body types.

Slide 13

Discuss

MACRONUTRIENTS: PROTEINS

What popular meals apply protein complementation?

How can you increase your protein intake?

What products are highest in protein?

Why is a high protein intake not good for your liver and kidneys?

- Take this opportunity to discuss what you have learnt and to broaden your knowledge.
- Students should provide their own examples where possible to get a better understanding.

Slide 14

Activity

MACRONUTRIENTS: PROTEINS

Add the foods below to correct categories.

sesame quinoa chickpeas Cheddar cheese

rice red lentils Quorn™ black beans

eggs lamb turkey walnuts

| High biological value | Low biological value |
|-----------------------|----------------------|
| | |
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| | |

Click on each food to reveal the correct answer.

- Students should write down which foods contain HBV proteins and which contain LHV proteins, and then compare their answers.
- Click on each type of food to reveal the answer.
- Students may also add their own examples.

Slide 15

Practice Question

MACRONUTRIENTS: PROTEINS

Give two ways in which vegans can include high biological value protein in their diet. (2 marks)

Click to reveal answer!

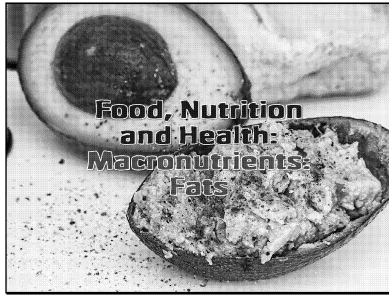
- Students should write their answers on a piece of paper and discuss. Click to reveal the answer and mark or self-mark their answers.

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PowerPoint 2: Fats

Slide 1

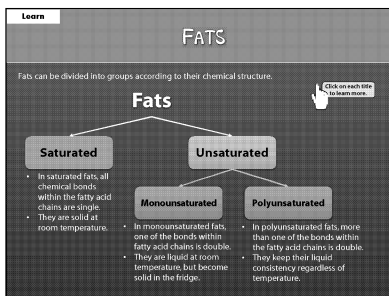


Slide 2



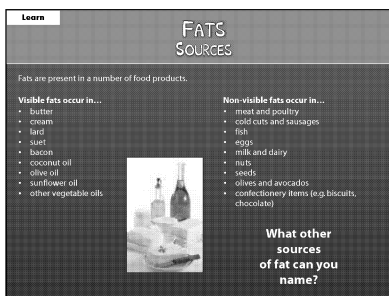
- Explain how a molecule of fat is built
- Take this opportunity to discuss how the way fats are built affects their characteristics. Saturated fats will be solid at room temperature, while unsaturated fats will be liquid at room temperature.

Slide 3



- Discuss how fats are divided into saturated and unsaturated according to their chemical structure.

Slide 4



- Discuss how fats can be found in food products.
- Get students to try to identify sources of fat in their own diets.

Slide 5



- Using the images as prompts, discuss the functions of fats in the body.

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Slide 6

Learn

FATS DEFICIENCY

Since you already know what we need fats for, it should be easy to guess what the effect is of eating too little fat...

You could feel **weak and hungry**, and you would **lose weight**.

You could feel **cold**.

You could develop symptoms of **vitamin deficiency**, such as **night blindness, depression or dry, cracked skin**.

You could experience life-threatening issues such as **reduction of kidney function and heart failure**.

You could experience **hormonal issues**.

- Click anywhere on the text to explain why these occur.
- You could feel cold – this is due to less insulation to the body, so if it, our bodies will not be able to regulate temperature.

Slide 7

Learn

FATS EXCESS

Eating too much fat is also unhealthy. Here is why...

You could gain weight and become overweight or obese.

You could develop type 2 diabetes.

Your blood cholesterol levels would rise, potentially leading to atherosclerosis and causing coronary heart disease, heart attack or stroke.

Your joints could become painful and your mobility could be affected.

Click on the picture to reveal the effects of fat excess.

- Click on the person to discuss further.

Slide 8

Learn

ESSENTIAL FATTY ACIDS

You already know that fats can be divided into saturated and unsaturated.

The group of unsaturated fats is very broad and contains also **essential fatty acids**.

The term 'essential' means that they **CANNOT** be built by the body from scratch and have to be provided in the diet.

The most important essential fatty acids are called omega-3 fatty acids.

Click on the boxes below to reveal the answers.

Why are they important?

Where can I find them?

- Click on the left-hand box to reveal the answer.
- Click on the right-hand box to reveal the answer.

Slide 9

Learn

TRANS FATS

Unsaturated fats, such as vegetable oils, are used to produce margarine and other solid fat spreads.

In the production process of trans fat, hydrogen is added to the mixture (liquid oils) to solidify the mixture.

This is to improve the taste and texture of food, and also to save money as restaurants can reuse trans fat for cooking in fryers.

For this reason, biscuits, cakes, chips, crisps and other deep-fried food products (and products which are made with hydrogenated oil) taste good and have a long shelf life.

Why are trans fats bad for you?

Click here to see the chemical structure of a trans fat.

- Click on the arrow to reveal the answer. See if students can explain the answer.

Slide 10

Learn

FATS REFERENCE NUTRIENT INTAKE (RNI)

How much fat is good for me?

The guidelines for a healthy diet indicate that a balanced diet should provide up to 35% of energy from fat.

This means that for an average diet of 2,000 kcal you should eat no more than 78 g of fat a day.

That includes all fats in the diet – those which are naturally present in foods (such as in fish or milk) and those added by you during cooking (such as oil or butter).

Saturated fats should not exceed more than 11% of daily energy intake.

- Discuss the reference nutrient intake.

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Slide 11

Learn

CHOLESTEROL

Cholesterol is a fatty substance.

- It builds cell membranes.
- It is used to build bile in the gallbladder and certain hormones.
- It improves the digestion of fats.



Cholesterol is transported in the blood by lipoproteins.

- Low-density lipoproteins transport cholesterol to the cells and increase the amount of cholesterol in blood. For this reason they are called bad cholesterol.
- High-density lipoproteins transport cholesterol to the liver, where it is either transformed or excreted. They lower the blood cholesterol level and are called 'good cholesterol'.


- Outline the importance of different types of cholesterol
- Ask the students if they can see in the picture contain cholesterol (egg yolk, bacon, and butter)
- Stress that the amount of cholesterol in the diet DOES NOT affect the blood. However, the amount of FATS consumed does!

Slide 12

Learn

CHOLESTEROL

High levels of total cholesterol and LDL cause coronary heart disease and atherosclerosis.



Healthy artery: Blood can flow freely through it.

Blocked artery: Deposited lipids with calcium and other substances, and begin to create plaque which sticks to the walls of the arteries and veins. More and more plaque build up in the cardiovascular system.

Coronary heart disease: The coronary heart disease is the most common cause of death in the UK. It is caused by atherosclerosis, which is the build-up of plaque in the coronary arteries.

Stroke: The blood cannot flow freely and the risk of a heart attack or stroke is very high.


It is estimated that the coronary heart disease is the most common cause of death in the UK.

- Click through to reveal the answer

Slide 13

Discuss

MACRONUTRIENTS: FATS



How do fats affect health – in both a good and a bad way?

What kind of fat is in your lunch/dinner today?

How can you increase the amount of omega-3 fatty acids in your diet?

- Take this opportunity to discuss what they have learnt and how it impacts on their diet

Slide 14

Activity

MACRONUTRIENTS: FATS

Research the amount of fat that is present in the following foods: bacon, corned beef, butter, Cheddar cheese, lettuce, salami, pumpkin seeds, salmon.



Find out which foods are highest in saturated, monounsaturated and polyunsaturated fats.

- SATS – saturated fats; PUFA – polyunsaturated fatty acids, PUFA – polyunsaturated fatty acids, PUFA – polyunsaturated fatty acids
- Values per 100 g unpreserved
- Cured pork bacon: SATS 45.0g
- Corned beef, canned: SATS 30.0g
- Butter, unsalted: SATS 81.0g
- Cheddar cheese: SATS 33.0g
- Lettuce: SATS 0.02g
- Salami: SATS 13.0g
- MUFA: 1.0g
- Pumpkin seeds: SATS 1.0g
- Salmon, raw: SATS 0.8g

Slide 15

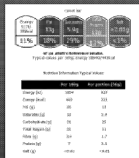
Activity

MACRONUTRIENTS: FATS

Label to the right shows the nutrient content of a cereal bar.

With reference to the label and indicated nutrients, explain why this cereal bar is not suitable for a person suffering from type 2 diabetes. (2 marks)

Click to reveal answer!



| Nutrient | Amount | % Daily Value |
|------------------|--------|---------------|
| Energy (kcal) | 100 | 20% |
| Protein (g) | 10 | 20% |
| Carbohydrate (g) | 20 | 40% |
| Fat (g) | 10 | 20% |
| Sugar (g) | 10 | 20% |
| Fibre (g) | 10 | 20% |
| Sodium (g) | 10 | 20% |

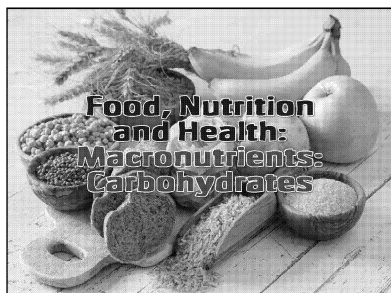
- Students should write their answer on a piece of paper and then click to reveal the answer or mark or self-mark their answer

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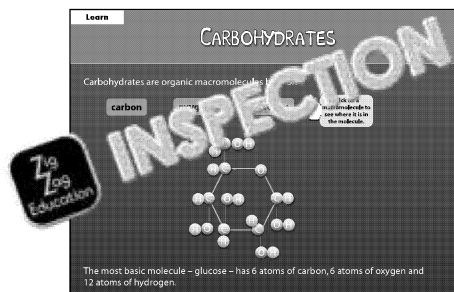


PowerPoint 3: Carbohydrates

Slide 1



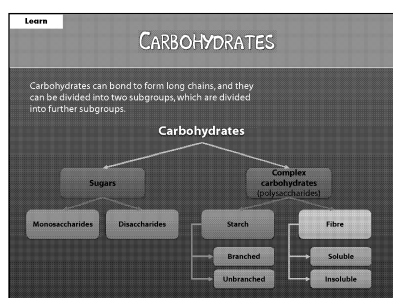
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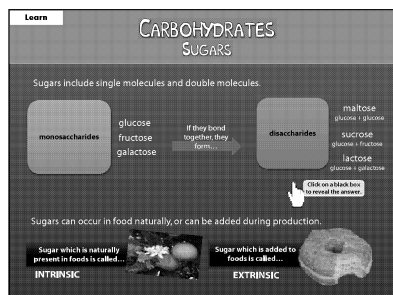
Briefly introduce the st

Slide 3



- Click to reveal the different types of carbohydrates.

Slide 4



- Click anywhere to reveal the definition of sugars.
- Click on the black text to reveal the definition of intrinsic and extrinsic sugar.

Slide 5



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Slide 6

Learn

CARBOHYDRATES SUGARS

High consumption of simple sugars may cause...

- weight gain
- obesity, leading to heart disease
- type 2 diabetes
- fatty liver disease
- tooth decay
- increased uric acid levels, leading to heart and kidney diseases

Slide 7

Learn

CARBOHYDRATES STARCH

When simple sugars bond together into long chains of hundreds of molecules, they form starches.

Starch can be found in a number of food products...

- Whole grains
- Cereal and bread
- Potatoes
- Beans and pulses
- Chickpeas
- Vegetables

carbohydrates are the main source of energy in a healthy, balanced diet!

Slide 8

Learn

CARBOHYDRATES FUNCTION

But what do we actually need carbohydrates for?

- Source of energy**
1 gram of carbs provides 4 kcal of energy
- Protein sparer**
Thanks to carbohydrates, the body doesn't have to use precious proteins as a source of energy
- Build DNA**
In fact, the D in DNA comes from deoxyribose, which is a type of sugar
- Feed the brain**
The brain needs a lot of energy to function!
- Energy storage**
Glycogen in the liver and muscles is an easily accessible store of sugars

Slide 9

Learn

CARBOHYDRATES EXCESS AND DEFICIENCY

Click to reveal the answers

| Excess | Deficiency |
|--|---|
| <ul style="list-style-type: none"> Weight gain Obesity Type 2 diabetes Hypertension Fatty liver disease | <ul style="list-style-type: none"> Weight loss Muscle loss, as the body will use proteins for energy Hypoglycaemia Fainting |

Slide 10

Learn

CARBOHYDRATES FIBRE

Dietary fibre, also called non-starch polysaccharides, is also built of many molecules of sugars bonded together.

Fibre can be divided into two groups, each of which plays different role in your body.

- Soluble fibre**
- Insoluble fibre**

Dietary fibre, just like other carbs, is found in many food products. The largest amounts in wholegrain products.

What happens if you eat too much fibre? What happens if you eat too little fibre?

Click the boxes to reveal the answers

- Click on the 'Excess' and 'Deficiency' buttons to reveal the answers.

- Students may try to guess the functions of each type of fibre.
- Students may try to guess the effects of fibre deficiency.
- Click on each of the fibre types to reveal the answers.

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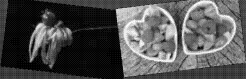


Slide 11

Learn

CARBOHYDRATES RECOMMENDED DAILY INTAKE

- Recommendations state that a balanced diet should provide 50% of energy from carbohydrates.
- This means that in an average diet of 2,000 kcal there will be 250 g of carbohydrates.
- People should limit their consumption of added sugars to 5% of the daily calorie intake (that's 25 g, or around 2 tablespoons).
- To remain healthy, people should eat 30 g of dietary fibre each day.




Slide 12

Discuss

MACRONUTRIENTS: CARBOHYDRATES

Give as many 'good' and 'bad' sources of carbohydrates as you can. Can you name the different types of carbohydrate?

Is it healthy to be on a low-carb diet? What consequences can a low-carbohydrate diet have on your body?



Zig Zag Education

- Take this opportunity to discuss the importance of carbohydrates and how it impacts on health.
- Discuss the nutrients provided by carbohydrates (energy, dietary fibre, vitamins (B1, B6, K) and minerals (iron, calcium, zinc)).


Slide 13

Activity

MACRONUTRIENTS: CARBOHYDRATES

Sort these foods into the correct categories. Some of them may be used more than once.

Click on the foods to reveal the answers.



| Intrinsic sugars | Added sugars | Starch | Fibre |
|------------------|--------------|--------|-------|
| | | | |

Slide 14

Practice Question

MACRONUTRIENTS: CARBOHYDRATES

Name two ingredients that would be suitable for a high-fibre diet. (2 marks)

Click to reveal answer!

- Students should write their answers on a piece of paper and show them to the teacher.
- Click to reveal the answers or mark or self-mark their answers.

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Zig Zag Education

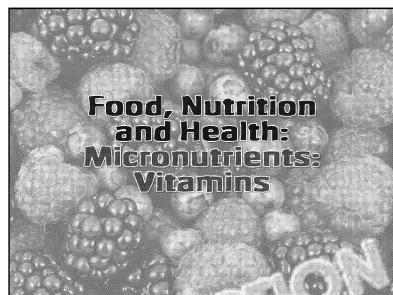
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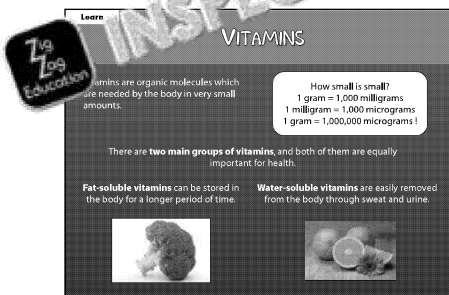
3.2.2 Micronutrients

PowerPoint 4: Vitamins

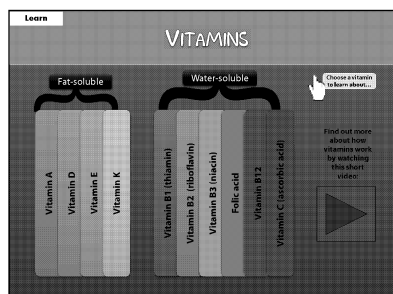
Slide 1



Slide 2

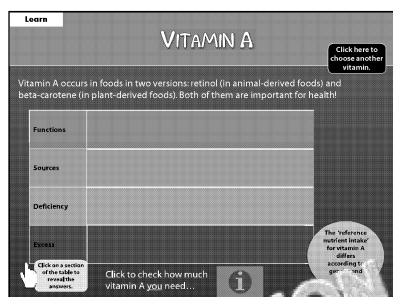


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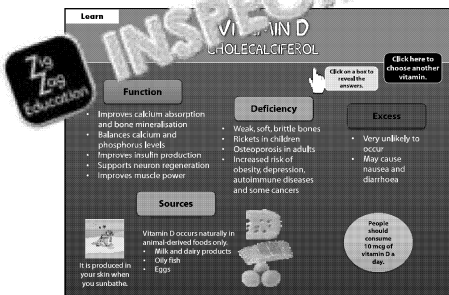
- Click on a vitamin to learn more
- Get back to this slide by clicking the 'Back' button to choose another vitamin

Slide 4



- Discuss each section of the slide and reveal the answers.

Slide 5



- Discuss each box and reveal the answers.

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Slide 6

VITAMIN E
TOCOPHEROL

Vitamin E is important for a number of reasons...

Protects the body as an antioxidant | Helps to build red blood cells

Prevents ageing | Supports the production of reproductive cells

Both deficiency and excess are very rare, but if they happen, here's what they cause...

| Deficiency | Excess |
|---|--|
| <ul style="list-style-type: none"> Anaemia Infertility Dry wrinkled skin Inability to focus Damage to the heart Weak muscles and muscle degradation | <ul style="list-style-type: none"> Headache Tiredness Diarrhoea Loss of appetite |

Sources: Vegetable oils, Egg yolk, Seeds and nuts

Men should eat 10 mg and women should eat 15 mg of vitamin E a day.

Click on a box to reveal the answers. | Click here to choose another vitamin.

- Click anywhere on the vitamin E.
- Click on 'Excess'/'Deficiency' and on 'Sources' to reveal the answers.
- Click anywhere to reveal the answers.

Slide 7

VITAMIN K
PHYLOQUINONE

A person should consume 0.001 mg of vitamin K per kilogram of body mass, e.g. a person weighing 65 kg would consume 0.065 mg.

Newborn children are given a vitamin K shot after birth to prevent dangerous bleeding in their brain.

Functions | Deficiency | Sources

Click on a box to reveal the answers. | Click here to choose another vitamin.

- Click on a box to reveal the answers.
- Students may attempt to click anywhere to find the answers for newborns.

Slide 8

VITAMIN B1
THIAMINE

Vitamin B1 is important for a number of reasons...

Supports the nervous system | Deficiency may cause beriberi disease

Helps to release energy from food by taking part in metabolism processes

Sources of thiamin | Effects of deficiency

Milk and dairy | Bread, cereals and fortified flour | Liver and lean meat | Beriberi disease | Muscle loss

Potatoes | Nuts and seeds

People should consume around 1 mg of thiamine a day (men more than women).

Click here to choose another vitamin.

- Click anywhere on the vitamin B1.
- Click on the 'Sources' (multiple times) to reveal the answers.
- Click on 'Effects of deficiency' to reveal the answers.

Slide 9

VITAMIN B2
RIBOFLAVIN

Vitamin B2 has many roles, including the following two that you should be aware of:

Helps to keep the skin, the eyes and the nervous system healthy

Helps to release energy from food by taking part in metabolism processes

Deficiency | Sources

Click on a box to reveal the answers. | Click here to choose another vitamin.

Men should consume 1.3 mg and women should consume 1.1 mg of riboflavin a day.

- Click to reveal.

Slide 10

VITAMIN B3
NIACIN

Let's take a look at the functions, sources and effects of deficiency of vitamin B3.

| Function |
|----------|
| |

| Sources |
|---------|
| |

| Deficiency |
|------------|
| |

Click on a box to reveal the answers. | Click here to choose another vitamin.

Reference: Niacin intake differs depending on sex and age. Click to check how much YOU need...

- Click to reveal.
- Click on the information for different groups of people.

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Slide 11

Learn

FOLIC ACID

Click on a box to reveal the answers.

Click here to choose another vitamin.

Function

- Helps to produce red blood cells
- Supports building of the nervous system in the foetus
- Regulates gene expression
- Helps to prevent cancer

Deficiency

- Spina bifida in newborns (unshapely, often open or exposed spinal cord)
- Anaemia
- Tiredness, trouble with concentration
- Depression
- Increased risk of cancer

Sources

Most abundant in leafy green vegetables such as spinach, watercress, and broccoli. Also present in other foods, such as liver, kidney and pulses, and cereals.

People should eat 200 mcg of folic acid a day. Pregnant and lactating women need MORE folic acid.

- Click on 'Function' (four answers).
- Click on 'Deficiency' to reveal answers.
- Click on 'Sources' to reveal answers.
- Click anywhere to see the next slide.

Slide 12

Learn

VITAMIN B12 COBALAMIN

Click here to choose another vitamin.

Vitamin B12, also known as cobalamin, has many functions:

- Processes folic acid in the body, supporting its functions
- Helps to release energy in cells by taking part in the Krebs cycle
- Helps to build red blood cells
- Supports the functioning and building of the nerve cells

This vitamin is present in animal foods only. For this reason, vegans are at a high risk of being deficient in cobalamin.

Click on a box to reveal the answers.

Click here to reveal sources...

People should consume 1.5 mcg a day.

- Click on the right-hand title to reveal answers.
- Click on the left-hand title to reveal deficiency.
- Click anywhere to reveal the next slide.

Slide 13

Learn

VITAMIN C ASCORBIC ACID

Click on a box to reveal the answers.

Click here to choose another vitamin.

Vitamin C is important for a number of reasons. Let's check out its functions and sources, and the effects of deficiency.

Function

- Helps to build and repair connective tissue
- Supports the healing of the wounds
- Improves iron absorption
- Is an important antioxidant

Sources

- Bell peppers and tomatoes
- Broccoli
- Cabbage
- Potatoes
- Blackcurrants, strawberries, and kiwi fruit
- Oranges and other citrus fruit
- ...and most other fruit and vegetables you can think of!

Deficiency

- Bleeding, sore gums and tooth loss
- Slow healing of wounds
- Increased risk of iron deficiency anaemia
- Low immunity
- Frequent infections

Learn more about scurvy.

To remain healthy, people should consume 55 mg of vitamin C a day.

- Click on the titles to reveal answers.
- Click on the arrow icon to reveal the next slide.

Slide 14

Learn

LOSS OF VITAMINS

Most vitamins are very unstable and become damaged due to various external factors. These factors include...

Heat **Oxygen** **Light** **pH**

Click on each title to reveal what vitamins are affected by that factor.

How to prevent vitamin loss in fruit and vegetables

- Store in cool, dark place to protect from light
- Don't cut or shred in advance to protect from oxygen
- Blanch to stop enzymic action and browning
- Do not soak in water to prevent vitamins from dissolving
- Cook for only as long as necessary to protect from heat and high pressure
- Put into water that is already boiling to shorten the cooking time
- Reuse the cooking water instead of pouring it away

- Click anywhere to uncover the loss of vitamin content in fruit and vegetables.
- Click on each title to reveal what vitamins are affected by it the most.
- Click on the background to reveal techniques for preventing vitamin loss.

Slide 15

Learn

ANTIOXIDANTS

Vitamins such as A, C and E are important antioxidants. But what does this really mean?

A normal atom has certain number of electrons on its outer shell, and these are grouped in pairs.

If an atom loses some of its electrons, it becomes very reactive, as it will seek to make up the number...

Such an atom is called free radical.

It can then attack other molecules, such as DNA, causing cell damage and cancer production.

This causes oxidative stress and cause various diseases, including cancer.

- Click on the title to reveal the definition of antioxidants.
- Click on the diagram to reveal the structure of a free radical.
- Click on the text to reveal the effects of free radicals.

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Slide 16

Learn

ANTIOXIDANTS

Antioxidants prevent that reaction.

This is because they contain more electrons than they need, so they can donate them to free radicals.



This is a win-win situation, because antioxidants are not harmed, free radicals gain their extra electrons and other molecules in the body are protected from them!

Click here to learn more about antioxidants and free radicals.

Click here to find out what foods contain the most antioxidants.

- Click on the arrow icon
- Click on the information icon

Slide 17

Learn

VITAMINS RECAP

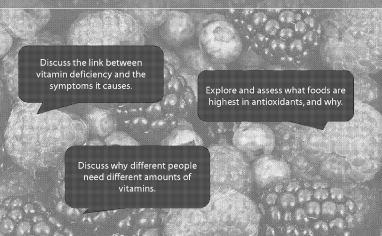
Watch this video to recap the most important information about vitamins.



Slide 18

Discuss

MICRONUTRIENTS: VITAMINS



Discuss the link between vitamin deficiency and the symptoms it causes.

Explore and assess what foods are highest in antioxidants, and why.

Discuss why different people need different amounts of vitamins.

- Take this opportunity to discuss what you have learnt and how it impacts your diet

Slide 19

Activity

MICRONUTRIENTS: VITAMINS

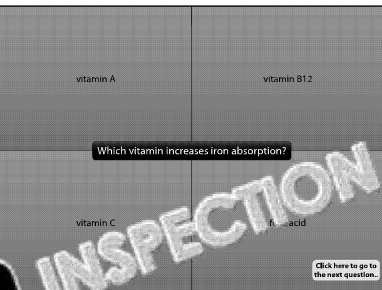
Click on your chosen answer.

If the answer is correct, it will appear green.

If the answer is incorrect, it will appear red.

Click on the yellow icon to go to the next question.

Slide 20



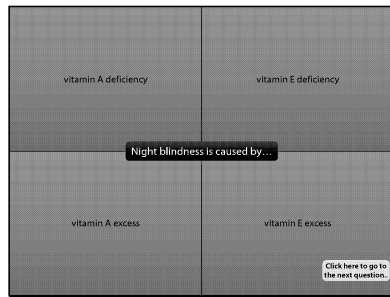
Which vitamin increases iron absorption?

Click here to go to the next question.

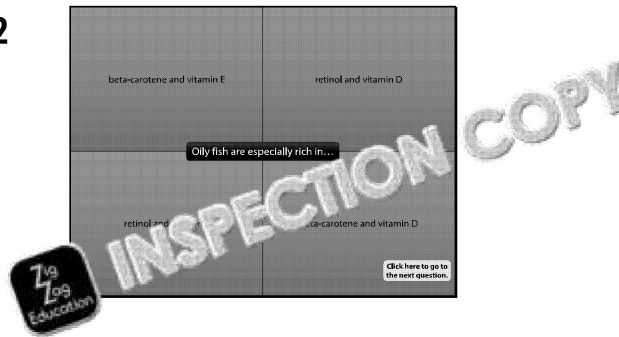
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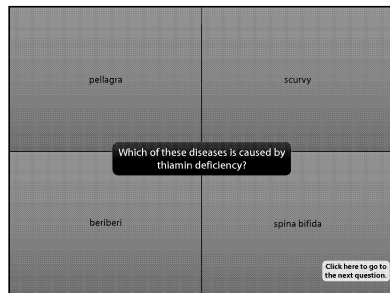
Slide 21



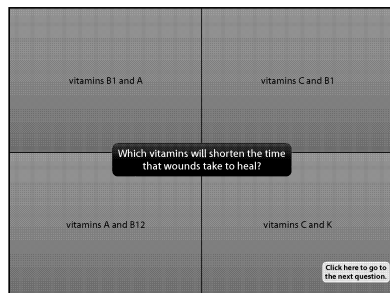
Slide 22



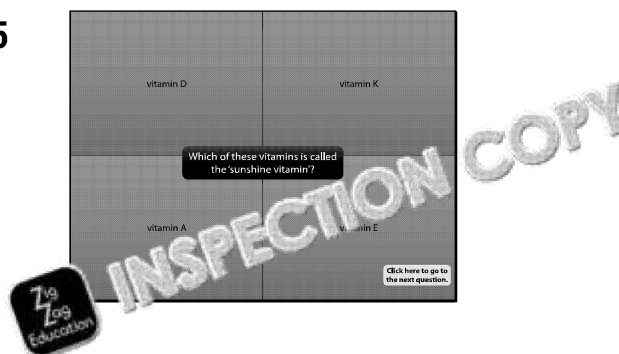
Slide 23



Slide 24



Slide 25



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Slide 26

| | |
|--|---|
| Folic acid helps to produce red blood cells. | Folic acid is found in green, leafy vegetables. |
| Which statement is untrue about folic acid? | |
| Pregnant women need more folic acid. | Women need less folic acid than men. |
| Click here to go to the next question. | |

Slide 27

| | |
|--|-----------|
| vitamin A | vitamin D |
| Which vitamin is found only in foods of animal origin? | |
| vitamin C | vitamin E |
| Click here to go to the exam-style question. | |

Slide 28

MICRONUTRIENTS: VITAMINS

Practice Question

Explain why eating your five a day may lower the risk of various diseases. (6 marks)

[Click to reveal answer!](#)

- Students should write their answer on a piece of paper and then mark it.
- Click to reveal the answer, mark or self-mark their answer.

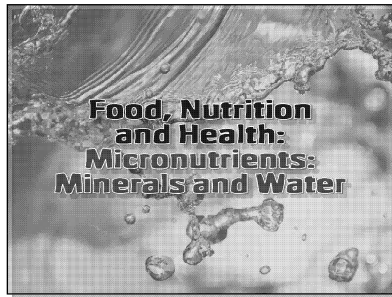
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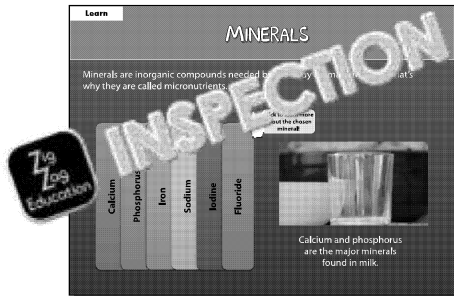


PowerPoint 5: Minerals and Water

Slide 1

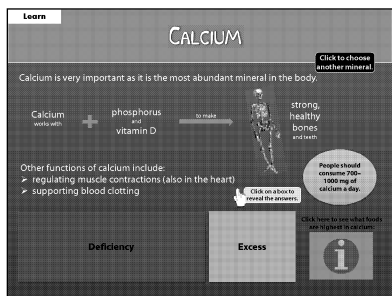


Slide 2



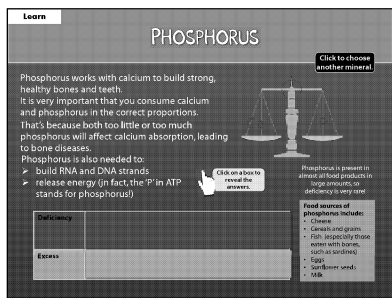
Click on each mineral to go to its individual slide or return to this home slide

Slide 3



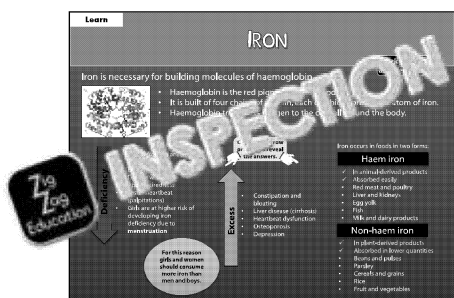
- Click to reveal effects of deficiency
- Click on the information icon to view calcium-rich food products

Slide 4



- Click to reveal the effects of deficiency.

Slide 5



Click on an arrow to display deficiency or excess.

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Slide 6

Learn

SODIUM

Click to choose another mineral

Sodium, along with potassium and chlorine, is an important electrolyte.

Click on a the letters around the circle to learn more.

- F** Functions:
 - Regulates blood pressure
 - Controls nerve impulses
 - Helps to transport substances to and from the cells
 - Increases production of gastric juices
- D** Deficiency:
 - Tiredness
 - Muscle cramps
 - Dehydration
 - Low blood pressure
 - Headaches
- E** Excess:
 - Hypertension
 - Swelling of the limbs
 - Stomach
 - Heart palpitations
- S** Sources:
 - Mineral salt
 - Meats and food cans
 - Many processed foods
 - Salty snacks, such as crisps and popcorn
 - Cheeses
 - Breads
 - Pickles
 - Tinned foods

Click on the letters around the circle to learn more.

Most people eat 100-150mg of sodium. Experts recommend consuming no more than 6mg of each (100mg) of sodium a day.

- Click on F, D, S or E to

Slide 7

Learn

IODINE

Click to choose another mineral

Iodine is an important trace element. This means that it is needed by the body in very small amounts (measured in micrograms).

Iodine is crucial for the thyroid gland.

- The thyroid gland is a small organ located at the front of the neck which produces very important hormones.
- These hormones regulate the metabolism of carbohydrates, fats and proteins, control body temperature and support growth and development of the body.

If you consume too little iodine your thyroid will swell to produce more iodine which in the body. This swelling is called a goitre.

If you consume too much iodine your thyroid could work too fast, and that could lead to hyperthyroidism.

This can make you feel very hot and tired, and cause you to lose weight.

Excessive iodine intake can also lead to a condition called hypothyroidism, which slows down the metabolism of the body.

Click on the letters around the circle to learn more.

Teenagers and adults should consume 100mg of iodine a day.

- Click on the 'Sources' or 'Deficiency' buttons.

Slide 8

Learn

FLUORIDE

Click to choose another mineral

Fluoride works with calcium, phosphorus and vitamin D to build strong bones and teeth.

Fluoride is especially important for the enamel.

- Builds and strengthens the enamel
- Protects the teeth from acids
- Slows down bacterial growth in the mouth
- Prevents dental caries
- Improves bone mineralisation

Click on the letters around the circle to learn more.

Deficiency

Excess

Sources

- Click on an arrow to see deficiency and excess.

Slide 9

Learn

MINERALS

Watch this video to learn more about calcium and phosphorus metabolism in the body.

- Watch the video to learn about calcium and phosphorus.

Slide 10

Learn

WATER

There is no doubt about it: **Water = Life**

But what do we need water for?

Support digestion

Water is an important part of all body fluids, including saliva and gastric juices.

It dissolves enzymes, which are then able to break down food into a form which can be absorbed into the bloodstream.

Eliminate waste from the body

Water dissolves toxins and harmful substances, which are then able to be excreted from the body.

Cooling the body

Water is a natural coolant. It helps to keep the body cool by absorbing heat and releasing it through the skin.

Click on the letters around the circle to learn more.

- Click on the letters around the circle to learn more.

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Slide 11

Learn

WATER

Water is lost from the body through:

- the lungs and nose when you breathe
- the bladder and intestines to urinate and stool
- the skin when you sweat
- your eyes when you cry
- cuts and wounds when you bleed

And that's why you need water when:

- you exercise a lot
- it is hot (or very cold) outside
- you have a fever
- you vomit or have diarrhoea
- you bleed a lot and can't stop the bleeding

Slide 12

Learn

WATER

So how much water do I actually need?

Click to see how much water is in the body.

An adult male's body contains about 60% water.
An adult female's body contains about 55% water.
An infant's body is made of 75% of water, and this amount drops 1% with each year of life.

Each person should consume around 2 litres a day.

That sounds like a lot, but in addition to drinking water, the food you eat, such as fruits and vegetables, also contains water.

For example, a cucumber is 96% water, and broccoli is 36% water.

Click here to compare how much water is in various food products.

Zig Zag Education

Slide 13

Discuss

MICRONUTRIENTS: MINERALS AND WATER

What other functions of water can you think of?

Sea fish are an important source of fluoride and iodine. What other nutrients do they contain? Discuss why fish is a healthy choice.

What foods are highest in calcium?

Why is it recommended that you eat meat with a salad?

- Take this opportunity to reinforce what you have learnt and how it impacts on health.
- Other functions of water are limited to:
- Providing minerals such as calcium
- Dissolving vitamins and minerals so they can be absorbed into the blood
- Creating a suitable environment for chemical reactions in the body
- Helping to chew and swallow food
- Allowing dietary fibre to move through the gut, giving a feeling of fullness/satiation

Slide 14

Activity

MICRONUTRIENTS: MINERALS

Match the minerals with effects of their deficiency. Each mineral may have more than one correct answer.

| | |
|----------|--------------|
| Calcium | Hypertension |
| Iron | Gout |
| Sodium | Tooth decay |
| Iodine | Anaemia |
| Fluoride | Rickets |

Click on each mineral to reveal the answer.

- Students should write down the correct matches.
- Click on each mineral to reveal the answer.

Slide 15

Practical

MAJOR MINERALS

Describe how you would provide an elderly individual with micronutrients to support their health and prevent osteoporosis in future. Give reasons for your choice. (6 marks)

Click to reveal answer!

Zig Zag Education

- Students should write down their answers on a piece of paper and then present them to the class.
- Click to reveal the answers or mark or self-mark their own.

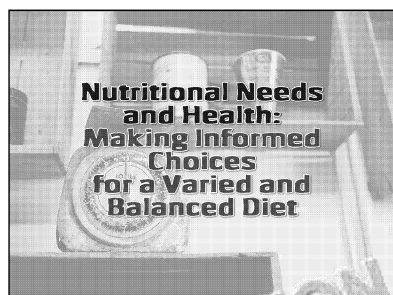
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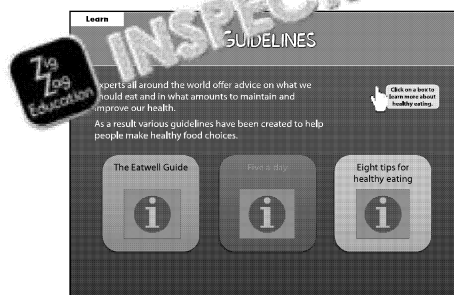
3.2.3 Nutritional needs and health

PowerPoint 6: Making Informed Choices for a Varied and Balanced Diet

Slide 1

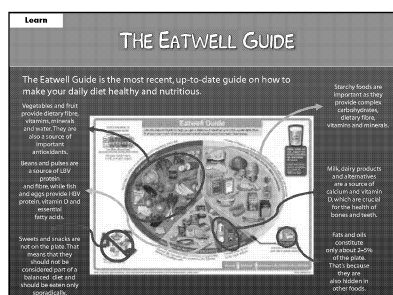


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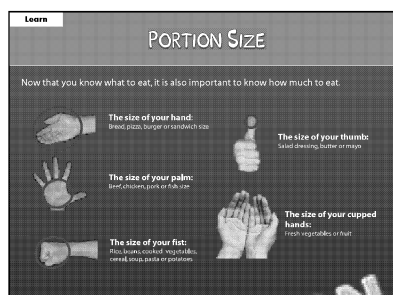


- Click on a box to go to
- Students can attempt to follow each set of guidelines on each slide.

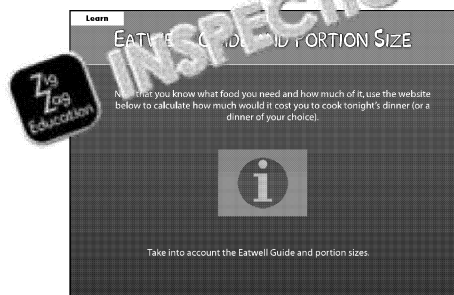
Slide 3



Slide 4



Slide 5



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Slide 6

Learn

NUTRITIONAL NEEDS IN LIFE

Nutritional needs of people differ depending on the following factors:

age gender state of health

Let's explore this further...

Slide 7

Learn

NUTRITION AT DIFFERENT LIFE STAGES

Click on the different sections of the table to reveal the answers.

| Life Stage | What do they need? | And why? |
|------------|--------------------|----------|
| Children | | |
| Teenagers | | |
| Adults | | |
| Elderly | | |

Slide 8

Learn

NUTRITION AND STATE OF HEALTH

Sometimes people have to avoid certain food products to stay healthy and avoid unpleasant symptoms or choose to avoid certain food products for ethical reasons.

| | | |
|---------------------------|-------|--|
| vegetarians | avoid | meat sometimes also fish, milk and dairy products or eggs |
| vegans | avoid | all food products of animal origin |
| coeliacs | avoid | gluten |
| lactose-intolerant people | avoid | lactose |

Slide 9

Learn

NUTRITION AND STATE OF HEALTH VEGETARIANS

The term 'vegetarian' is very broad and can apply to various groups of people. Depending on what they do or don't eat, vegetarians can be divided into:

| | |
|-----------------------|---|
| Lacto-ovo-vegetarians | eat milk, dairy products and eggs |
| Ovo-vegetarians | eat eggs, but not milk |
| Lacto-vegetarians | eat milk and dairy products, but not eggs |
| Pescatarians | eat fish |

Their diet isn't difficult to balance, as eggs, milk, dairy products and fish provide HBV and vitamin B12.

To replace meat, choose protein alternative products such as:

Slide 10

Learn

NUTRITION AND STATE OF HEALTH VEGANS

Vegans choose not to eat any products of animal origin, including:

- meat and poultry (and everything made from them, e.g. ham or sausage)
- fish
- eggs
- milk and dairy products (e.g. butter, cream)
- honey

In fact, vegans only eat plant foods. For this reason their diet may be low in:

- vitamin B12
- vitamin D
- HBV protein

It is important for vegans to eat a variety of foods to prevent malnutrition or anaemia.

What to change and:

- Plant-based meat alternatives
- Seitan
- Chickpea products
- Broccoli
- Barley and cereals
- Fortified margarine
- Tofu and tempeh
- Mycoproteins and mushrooms

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Slide 11

Learn

NUTRITION AND STATE OF HEALTH COELIACS

Coeliac disease is an inborn condition in which gluten cannot be properly broken down in the digestive system. If a coeliac consumes gluten, it may cause damage to the villi in the intestine and affect absorption of all other nutrients.

Click on a button to reveal the answers.

But what is gluten?

Where is gluten? What is safe to eat? Be careful when buying...

- Click to reveal the answer.

Slide 12

Learn

NUTRITION AND STATE OF HEALTH LACTOSE INTOLERANCE

Lactose-intolerant people CANNOT consume lactose.

What is lactose?

Lactose is a disaccharide built of one molecule of glucose and one molecule of galactose bonded together. Lactose occurs naturally in all mammalian milk. For example, human milk is 6.5% lactose, cow's milk is 4.8%, goat's milk is 4.2% and sheep's milk is 5.8%.

In a healthy gut, lactose would be broken down by an enzyme called lactase into glucose and galactose. Lactose-intolerant people do not produce this enzyme, and consumption of lactose can cause:

- bloating
- diarrhoea
- nausea

Lactose intolerance can be congenital or acquired. According to statistics, average limited tolerance to lactose is found in 68% of the population.

It is important to read labels and choose lactose-free products.

To eat or not to eat...?

- Students may attempt to eat products that cannot be eaten.
- Click on the 'To eat or not to eat...' button to reveal the answer.

Slide 13

Learn

NUTRITION AND STATE OF HEALTH LACTOSE INTOLERANCE

Watch this video to see how to avoid milk and still provide calcium and vitamin D in a diet.

Slide 14

Learn

NUTRITION AND STATE OF HEALTH HIGH-FIBRE DIET

So far you have learnt about how to **avoid** certain foods in a diet. However, it is sometimes necessary to include certain products to improve the quality of a diet. An example is a high-fibre diet, in which certain food products are chosen to increase the amount of fibre eaten each day. Why would I need more fibre?

- To prevent or cure constipation
- To improve bowel movements
- To lower the risk of cancer
- To lower blood cholesterol and sugar levels
- To lower the risk of heart disease and type 2 diabetes
- To maintain healthy body weight

How to include more fibre in the diet

- Choose wholegrains (e.g. wholemeal bread, brown rice, oats)
- Eat more beans and pulses
- Choose raw vegetables and fruit
- Eat dried fruit (e.g. prunes and apricots)

- Students may attempt to eat products that cannot be eaten.
- Click on 'How to include more fibre in the diet' to reveal the answer.
- Click on the background image to reveal the answer to 'Why would I need more fibre?'

Slide 15

Learn

HOW TO MAINTAIN A HEALTHY BODY WEIGHT

Many people in the UK struggle with overweight and obesity – in fact, the UK is the third most obese country in Europe according to WHO in 2018.

For this reason, it is very important to take steps to prevent overweight and obesity, and all diseases that can be caused by them. To maintain a healthy body weight, the following steps should be taken:

- Eat a healthy diet
- Be active
- Drink plenty of water

- Students may attempt to eat products that cannot be eaten.
- Click on the 'How to include more fibre in the diet' button to reveal the answer.
- Click on the background image to reveal the answer to 'Why would I need more fibre?'

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Slide 16

Discuss

MAKING INFORMED CHOICES FOR A VARIED AND HEALTHY DIET

What food products can provide calcium in a lactose-free diet?

How easy is it to apply the healthy eating guidelines?

Discuss how an elderly individual can have a balanced diet.

What factors other than state of health and age can affect what a person eats or does not eat?

- Take this opportunity to discuss what you have learnt and how it impacts on your diet.

Slide 17

Activity

MAKING INFORMED CHOICES FOR A VARIED AND HEALTHY DIET

Try to plan a balanced one-day diet for a person who:

- is 60 years old
- is lactose intolerant
- and is vegetarian

You can use this website to check the nutritional needs of a 60-year-old:

What products can you use?
What products can't you use?
What are dietary needs of that person?

Are there any other special needs or requirements?

Slide 18

Practice Question

MAKING INFORMED CHOICES FOR A VARIED AND HEALTHY DIET

Traditional Sunday roast contains roast meat, potatoes, vegetables, gravy and Yorkshire pudding.

State two reasons why traditional Sunday roast is not suitable for vegans. (2 marks)

Click to reveal answer!

- Students should write their answers on a piece of paper and then click to reveal the answer.
- Click to reveal the answer or mark or self-mark their answers.

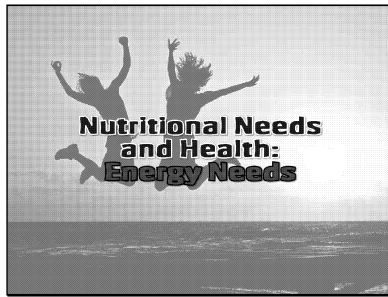
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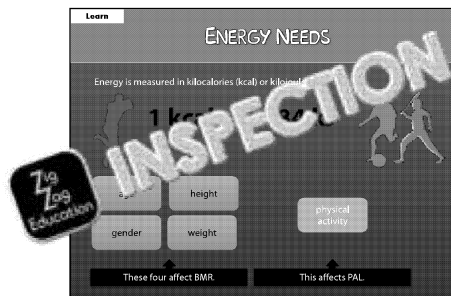


PowerPoint 7: Energy Needs

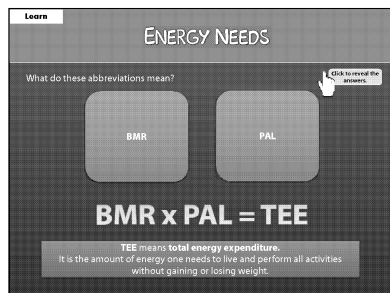
Slide 1



Slide 2

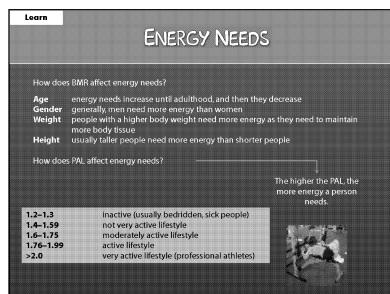


Slide 3

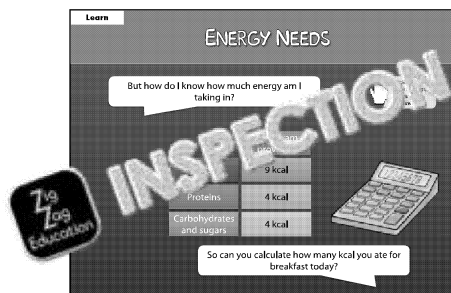


- Click on the 'BMR' and 'PAL' buttons to reveal the answers.
- Click on the equation to reveal the answer.

Slide 4



Slide 5



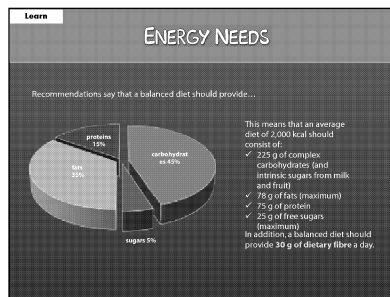
- students should recall the energy values for each macronutrient provided in the table above.
- Reveal the answers by clicking on the 'Reveal Answers' button.

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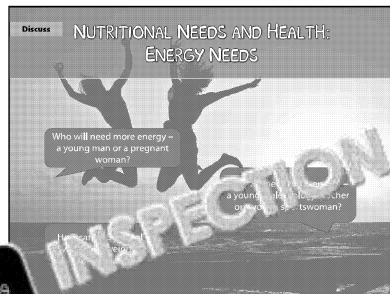
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Slide 6



Slide 7



- Take this opportunity to learn about energy and how it impacts health

Slide 8

Activity

NUTRITIONAL NEEDS AND HEALTH: ENERGY NEEDS

Calculate your BMR using one of the equations below.

Boys $BMR = 66.5 + (13.75 \times \text{weight in kg}) + (5.003 \times \text{height in cm}) - (6.755 \times \text{age in years})$

Girls $BMR = 655.1 + (9.563 \times \text{weight in kg}) + (1.850 \times \text{height in cm}) - (4.676 \times \text{age in years})$

Now, try to estimate your PAL and calculate your TEE.

Compare the results with your friends.

Slide 9

Activity

NUTRITIONAL NEEDS AND HEALTH: ENERGY NEEDS

Fill in the plate to indicate how much of each nutrient a balanced diet provides.

Carbohydrates 60%

Protein 15%

Fat 25%

Sugars 5%

- Click on each macronutrient to learn more about its role in the body

Slide 10

Practice Question

NUTRITIONAL NEEDS AND HEALTH: ENERGY NEEDS

What does the abbreviation BMR stand for?

A. Basic meal replacement

B. Basic muscle ratio

C. Banana muffin reduction

D. Basal metabolic rate

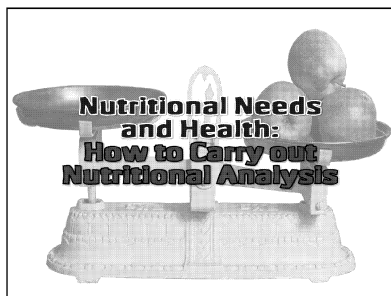
- Students should choose the correct answer
- Click to reveal the correct answer

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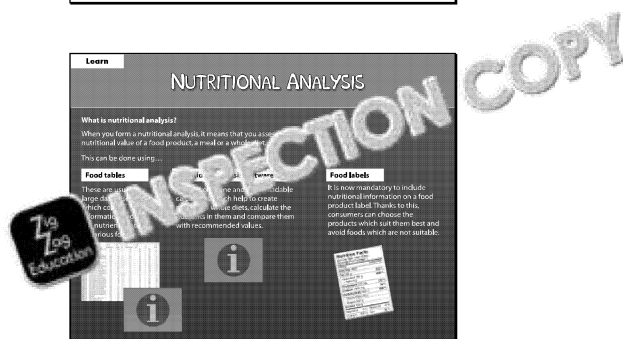


PowerPoint 8: How to Carry out Nutritional Analysis

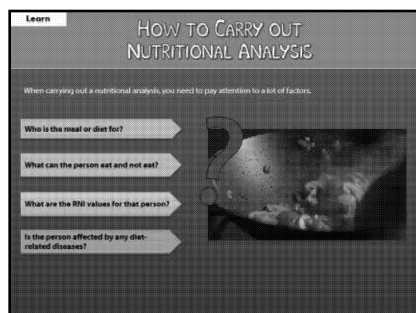
Slide 1



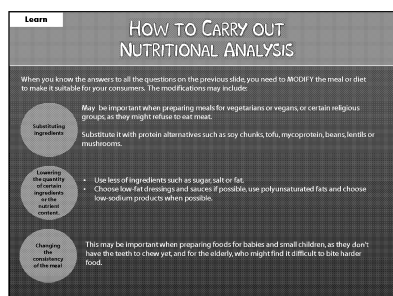
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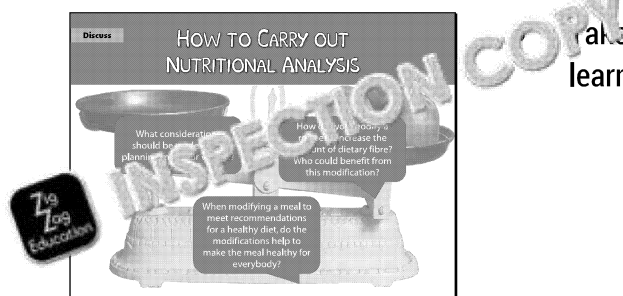
Slide 3



Slide 4



Slide 5



Take this opportunity to
learn and how it impacts

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Slide 6

Activity

HOW TO CARRY OUT NUTRITIONAL ANALYSIS

Assess the nutritional value of the recipe below. You will need to use relevant food tables or analysis software.

Click on each tab to reveal the answers.

Values per portion

| Energy | Protein | Fats and saturated | Carbohydrate | Sodium | Fibre |
|----------|---------|--------------------|--------------|--------|-------|
| 584 kcal | 44.1 g | 33 g | 22.8 g | 676 mg | 2.2 g |

Steak and kidney pie

- 200 g puff pastry
- 2 tbsp oil
- 700 g beef
- 200 g lamb kidney
- 150 g chopped onion
- 30 g flour
- 850 ml beef stock
- 1 tsp salt
- 1 tsp of Worcester sauce
- 1 egg

Serves 6

- Who can safely eat this meal?
- Who should avoid it, and why?
- Who would not like to eat it at all?
- How can you improve or modify it for these people?

Slide 7

Practice Question

HOW TO CARRY OUT NUTRITIONAL ANALYSIS

The ingredients to the right are for leek and potato soup. Explain why this dish is not suitable for people suffering from hypertension. (2 marks)

Click to reveal answer

Leek and potato soup

- 1 tbsp butter
- 1.2 l vegetable broth
- 235 g potatoes
- 200 g leeks
- 80 g onion
- 100 g ham

- Students should write on a piece of paper the answer and then click to reveal the answer to mark or self-mark their work.

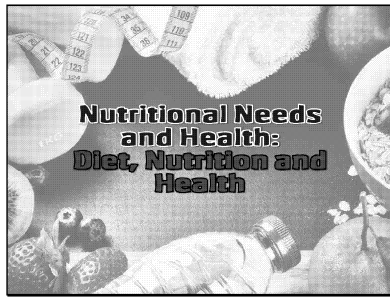
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PowerPoint 9: Diet, Nutrition and Health

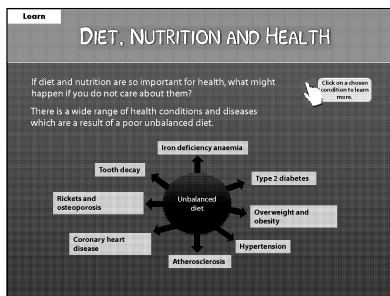
Slide 1



Slide 2



Slide 3



- Students should guess improper diet/nutrition
- Click to reveal the answer
- Students may also suggest fatty liver disease, alcohol

Slide 4

Slide 5

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Slide 6

Learn

TYPE 2 DIABETES

What is type 2 diabetes?
It is a metabolic disorder in which glucose cannot be processed properly by the body. As a result of a high sugar diet, the body becomes resistant to the insulin that is produced.

This is potentially dangerous, as high blood sugar levels affect the nerves and may lead to serious health issues, such as blindness or leg amputations.

How does this happen?
The pancreas is the internal organ which produces many enzymes and hormones.

One of these hormones is insulin. 1. After a meal, food is broken down and glucose is absorbed through the wall of the intestines into the bloodstream. 2. The pancreas produces insulin, which allows the glucose to enter the cells and tissues of the body. 3. If there is too much insulin, or the insulin doesn't work properly, the glucose cannot enter the cells, and blood sugar levels rise.

How to adjust the diet?
• Eat regular small meals.
• Exclude all sources of free sugars.
• Increase consumption of complex carbohydrates as they don't raise blood sugar levels as dramatically.
• Eating high fibre wholemeal products, such as wholemeal bread or brown rice.
• Include sources of fibre as it slows down sugar absorption.
• Choose raw vegetables and fruit rather than cooked ones.
• Limit the amount of saturated fats.
• Avoid eating ready to eat, highly processed foods.
• Choose low fat cooking methods, such as steaming or dry frying.

[Click here to choose another condition.](#)

Slide 7

Learn

HYPERTENSION

What is hypertension?
It is a condition in which blood pressure is abnormally high (over 90/140 mmHg). It may be dangerous as blood vessels may break as a result, leading to dangerous bleeding and stroke.

What causes hypertension?
• Obesity
• High salt/sodium intake
• Low levels of physical activity
• High consumption of alcohol and coffee
• Smoking
• Stress
• Age – people over 65 years old are more likely to develop it.

How to adjust the diet to improve the situation?
• Cut down on salt/sodium
• Avoid eating processed food
• Avoid drinking alcohol
• Stop smoking
• Try to lose weight
• Eat more fruit and vegetables

[Click here to choose another condition.](#)

Slide 8

Learn

ATHEROSCLEROSIS AND CHD

What is atherosclerosis?
Atherosclerosis is a condition in which cholesterol bonds with calcium and other substances and sticks to the walls of blood vessels, creating a plaque. If there is a lot of plaque build-up, it can block the entire vein or artery.

What is coronary heart disease?
In CHD, the plaque builds up in the blood vessels of the heart. If these are blocked, it can cause heart attack and death.

How to adjust the diet to improve the situation?
• Stop smoking
• Cut down on salt/sodium
• Cut down on saturated fats
• Include more polyunsaturated fats in the diet (especially omega-3), e.g. from fish, nuts and seeds, avocados and olive oil.
• Exercise more.
• Cut down on free sugars.
• Eat more fibre, as it lowers blood cholesterol levels.
• Try to maintain a healthy body weight.

[Click here to choose another condition.](#)

Slide 9

Learn

BONE HEALTH

What do we mean by bone health?
Healthy bones build the skeleton. They act as scaffolding for all the muscles and tendons. Healthy bones are strong, allowing us to maintain a vertical body position, store important minerals and produce red blood cells.

Why is rickets bad for us?
Rickets is a disease in which bones are not built properly and are soft and weak. Such bones may bend and become deformed, and as a result deformities in body posture occur and that makes walking difficult and painful.

Why is osteoporosis bad for us?
Osteoporosis is caused by old age, and as bones become porous and brittle as the body stops bone remodeling. Therefore, the stronger the bone in the place, the more bone there is to lose away. Therefore, it is estimated that people consume calcium and vitamin D and also get plenty of weight-bearing exercise, so that they increase their bone density at a young age. Increased bone density will delay how much bone is lost as a result of osteoporosis.

How to change the diet to improve the situation?
Calcium and vitamin D intake can significantly reduce the risk of rickets and it can increase the density of bones at a young age up to 30 years old.
• Drink and dairy products (milk, yogurt, cheese) – rich in calcium.
• Eat and drink fortified foods.
• Avoid caffeine and alcohol as they increase calcium excretion.
• Sunlight (remember to wear sunscreen to protect against skin and UVR rays) – helps produce vitamin D in the skin.

[Click here to choose another condition.](#)

Slide 10

Learn

TOOTH DECAY

What is the big deal with tooth decay anyway?
Tooth decay is when tooth enamel is damaged and bacteria begin to destroy the tooth. At the beginning it just causes the tooth to look stained, but then it may cause severe pain, lead to tooth loss and even infect the whole body with the mouth bacteria.

How does this happen?
1. Your teeth are covered with the hardest substance in your body – enamel. 2. Although enamel is very strong, it may be dissolved by acids present in the food you eat. 3. This creates a way for bacteria to gain access to the dentin. 4. If they make their way to the root of the tooth, you may feel a sudden, severe pain.

How to prevent tooth decay?
The key is proper dental hygiene – brushing, flossing, using a mouthwash and dental floss.
There are also a number of things you can do to reduce the risk of tooth decay:
• Limit consumption of sugary foods and drinks, especially sugary drinks.
• Rinse your mouth with water after eating or drinking sugary foods or drinks.
• Eat a diet rich in calcium, such as fresh oranges or orange juice.
• Drink water throughout the day.
• Eat in the diet, e.g. from milk or broccoli, to strengthen teeth.

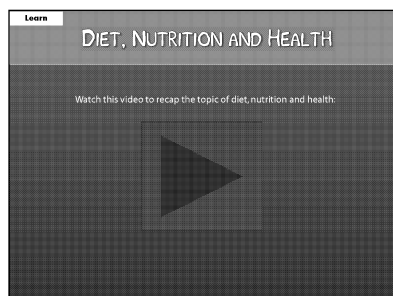
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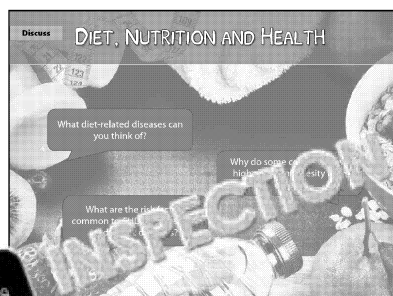
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Slide 11

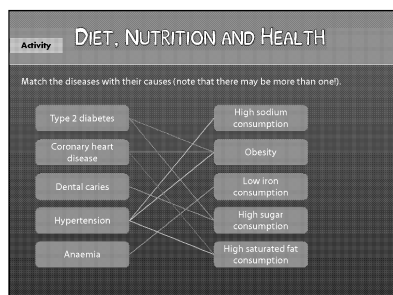


Slide 12



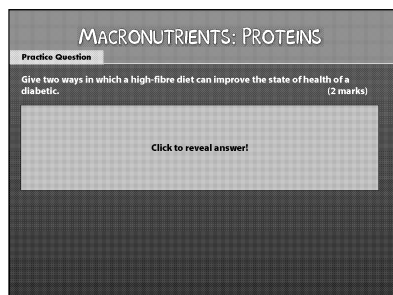
- Take this opportunity to discuss diet and how it impacts health.

Slide 13



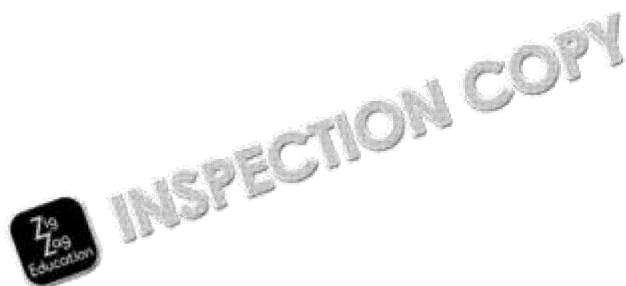
- Students should match diseases with their causes on paper.
- Click on a chosen disease to reveal the answer.

Slide 14



- Students should write their answer on a piece of paper and then click to reveal the answer.
- Click to reveal the answer or self-mark their answer.

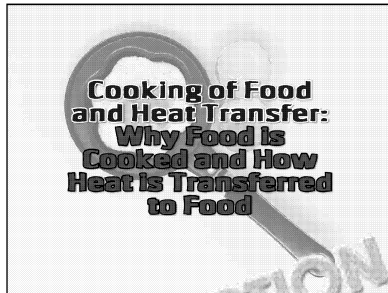
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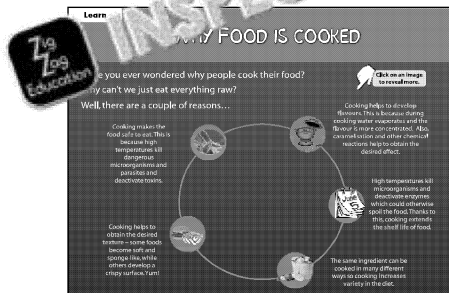
3.3.1 Cooking of food and heat transfer

PowerPoint 10: Why Food is Cooked and How Heat is Trans

Slide 1

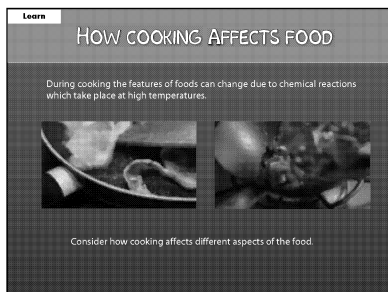


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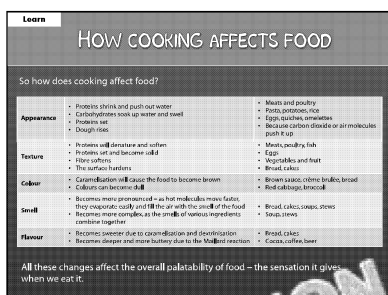
- Get students to consider why foods are safe to eat.
- Click on each image to learn more.

Slide 3

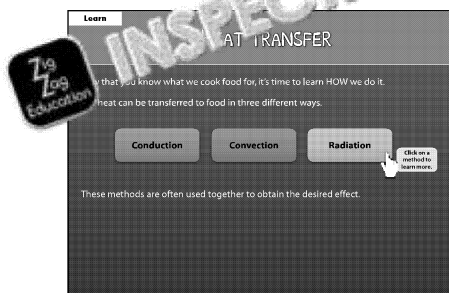


- Discuss how cooking affects food.
- Consider key examples.

Slide 4



Slide 5



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Slide 6

Learn

HEAT TRANSFER CONDUCTION

Conduction is the direct transfer of heat from the pan (or another heating element) to the food.

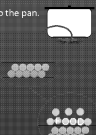
[Click here to choose another method.](#)

Here is how it happens...

First, the heat is transferred from a hob or heating element to the pan. The pan is made of metal. The molecules of metal warm up and begin to vibrate.

These vibrations create kinetic energy, which is then transferred directly to food in the pan, which also warms up and begins to vibrate.

For this reason you should stir your dish or pour some water in to prevent burning.



Slide 7

Learn

HEAT TRANSFER CONVECTION

Convection is an indirect method of heat transfer as it uses water or air to transfer the heat.


[Click here to choose another method.](#)

Here is how it happens...

This phenomenon is called **convection**.

As the water warms up, the molecules expand and rise.

The heat is then transferred from the hot, moving water molecules to the food.



- Discuss how convection

Slide 8

Learn


HEAT TRANSFER RADIATION

Radiation is an indirect method of transferring heat, either through electromagnetic waves or by moving subatomic particles.

[Click here to choose another method.](#)

There are two types of radiation which are used in cooking:

| Microwave | Infrared |
|--------------------------|--|
| Used in microwave ovens. | Used in electric ovens, chargrills, broilers and toasters. |



- Discuss the difference between microwave and infrared radiation.
- More information on both slides.

Slide 9

Learn

HEAT TRANSFER MICROWAVE

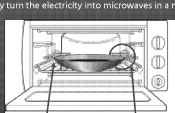
Microwave ovens use microwaves to heat up food. They turn the electricity into microwaves in a magnetron.

The waves heat up water molecules, which warm up and begin to vibrate.

The microwaves are then sent into the chamber by an antenna.

The vibrating water molecules transfer energy to other molecules in the food by friction.

[Watch this video to learn more about microwaves.](#)



Slide 10

Learn

HEAT TRANSFER INFRARED

Another type of radiation used in cooking is infrared.

Infrared radiation uses waves which are invisible to the eye to send energy to food.

There can be two types of heat source – electricity in electric ovens and fire in chargrills and stoves.

As the coal in a stove or the heating element in the oven heats up, it begins to send the waves.

These are then transmitted to a grill or baking tin, which transfers the heat directly to the food.



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Slide 11

Learn

HEAT TRANSFER

Did you know that?
Some cooking methods use the different types of heat transfer at the same time. Here is an example:

As the heat waves heat up the tin, the metal in it transfers the warmth directly to the muffin through **conduction**.

When you bake muffins, the heat produced by the oven is sent as heat waves to the baking tin and the muffin batter. This happens through **radiation**.

If you switch on the fan, you encourage the movement of air inside the oven, and therefore, produce **convection** currents to speed up the cooking process.

- Discuss how cooking methods use different methods of heat transfer

Slide 12

Learn

HEAT TRANSFER

Watch the video to recap heat transfer and see how it works in real life.

Zig Zag Education

Slide 13

Discuss

WHY FOOD IS COOKED AND HOW HEAT IS TRANSFERRED TO FOOD

What cooking methods use conduction?

What kind of heat transfer do you use when you cook various meats?

How do different methods of heat transfer affect the sensory aspects of food?

- Take this opportunity to discuss what you have learnt and how it impacts on food

Slide 14

Activity

WHY FOOD IS COOKED AND HOW HEAT IS TRANSFERRED TO FOOD

Identify what methods of heat transfer are used when cooking the following dishes – remember, there can be more than one!

| | |
|-------------------|--|
| Shepherd's pie | |
| Corishish pasty | |
| Yorkshire pudding | |
| Stew | |
| Beef steak | |
| Hard-boiled eggs | |

- Click on each box to reveal the answer

Slide 15

Practice Question

WHY FOOD IS COOKED AND HOW HEAT IS TRANSFERRED TO FOOD

Analyse the instructions for making a bolognese sauce and answer the questions.

a) Explain how heat is transferred when boiling pasta. (3 marks)

b) Explain why minced beef has to be cooked. (2 marks)

Click to reveal answer

Zig Zag Education

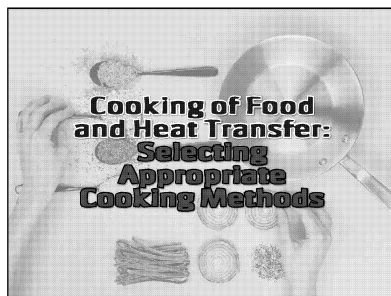
- Students should write their answers on a piece of paper and then click to reveal the answers and mark or self-mark their work

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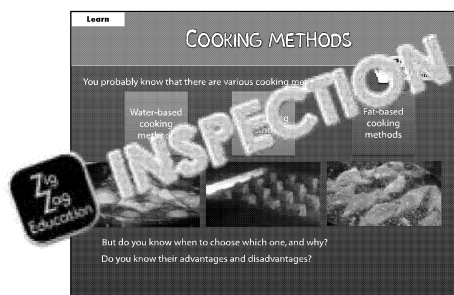


PowerPoint 11: Selecting Appropriate Cooking Methods

Slide 1

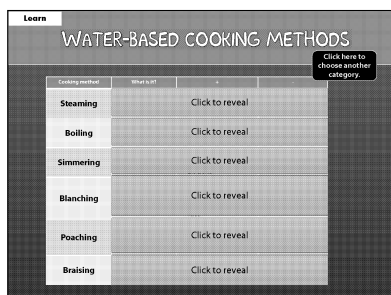


Slide 2



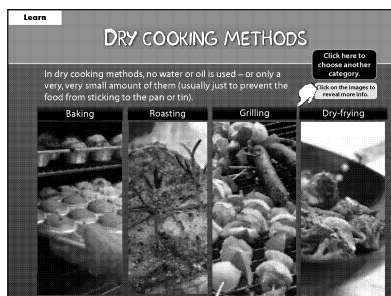
- Introduce cooking methods
- Assess students' initial knowledge
- Click on each box to reveal more information

Slide 3



- Get students to think about the advantages and disadvantages of each method

Slide 4



- Get students to think about the advantages and disadvantages of each method

Slide 5



- Get students to think about the advantages and disadvantages of each method

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Slide 6

Learn

FAT-BASED COOKING METHODS

What kinds of fats are best for cooking?

Saturated fats, such as lard, give better or coarser oil

Usually have a very high smoking point and can be used for both savory and sweet recipes. Fresh butter CANNOT be used as it burns easily.

Unrefined, cold pressed oils, such as extra virgin olive oil

Although it sounds healthy and tasty, this oil is not the best for cooking, as it will lose all of its flavor and nutritional value during the process. Heat will ruin it completely.

Refined oils high in polyunsaturated fats, such as soy or canola oil

At high temperatures polyunsaturated fats may change their chemical structure and turn into harmful carcinogens. Thus, it is better to use them at lower temperatures or in salads and soups than for frying at high temperatures.

Refined oils high in monounsaturated fats, such as refined olive oil, rapeseed oil or rice oil

There is only one double bond in each molecule of fat, so the risk of creating harmful trans fats is reduced greatly. Also, refined oils have a very high smoking point, usually around 230 °C, so they can be used safely for a longer time.

Click here to choose another category

Slide 7

Learn

PREPARATION METHODS

The way you cook the food matters... but so does the way you prepare it beforehand!

Washing, drying and cutting

Helps to make sure the food you cook is the best quality one (washed or damaged, or covered in dirt, dirt or bacteria)

Cutting, drying and shredding

Helps to make the food more evenly cooked and easier to eat. It also helps to make the food more tender and easier to digest. It also helps to make the food more attractive and easier to eat.

Boiling and curing

Helps to make the food more tender and easier to eat. It also helps to make the food more attractive and easier to eat.

Marinating

Helps to make the food more tender and easier to eat. It also helps to make the food more attractive and easier to eat.

Click here to choose another category

Slide 8

Discuss

SELECTING APPROPRIATE COOKING METHODS

What cooking methods are good for health and why?

What cooking methods improve palatability?

Which cooking and preparation methods can you choose to make food both tasty and healthy?

What foods are most often marinated, and why?

- Take this opportunity to discuss what you have learnt and how it impacts your choices.

Slide 9

Activity

SELECTING APPROPRIATE COOKING METHODS

Decide which cooking methods are good for health and which ones are not. Try to explain why.

blanching poaching braising boiling
grilling roasting steaming stir-frying
deep-frying

Good Good, but... Bad

Click on the methods to reveal the answers

- Students should write down which cooking methods are good or bad for health and the reasons behind their choices.
- Students may also describe other methods not mentioned in the activity.
- Click on a chosen method to reveal the answer.

Slide 10

Practice Question

SELECTING APPROPRIATE COOKING METHODS

Which ingredient of a marinade helps to denature proteins and increase the moistness of the food? (1 mark)

a) Oil
b) Vinegar
c) Salt
d) Pepper

Click here to reveal the answer

- Students should write down their answer on a piece of paper and then click on the link to reveal the answer. They can then mark or self-mark their answer.

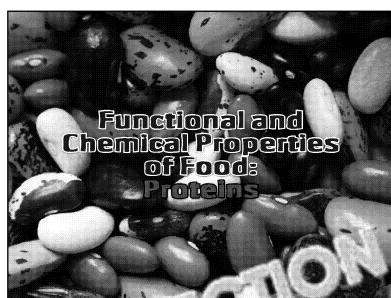
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3.3.2 Functional and chemical properties of

PowerPoint 12: Proteins

Slide 1



Slide 2

WHAT ARE PROTEINS?

Proteins are organic macromolecules present in many food products. But in order to know how they act during cooking you need to remember how they build...

Proteins are made of amino acids bonded together into long chains. The chain can fold into an alpha helix or into a sheet, and then coil up into a tight bundle. This is called the tertiary structure of the protein. If many chains bond together, they form a quaternary structure of a protein.

Proteins occur in such foods as:

- meat, poultry and fish
- eggs
- milk and dairy products
- flour
- soy beans and pulses
- ... and many others.

So what happens to protein when you cook it?

- Introduction to proteins
- Students to highlight sources: eggs, beans.

Slide 3

PROTEIN DENATURATION

Denaturation is a process in which the structure of the protein is damaged.

This may happen when you:

- apply high temperatures to proteins
- add strong acids to proteins
- apply mechanical action to proteins

Why does this happen?

Heat, acids and whisking weaken and damage the bonds within a protein molecule. As a result, its structure is damaged and the protein unfolds.

When do I use it?

- Heat: boiling eggs, baking a cake, roasting meat, frying an omelette...
- Add: marinating meat, making yoghurt, adding lemon juice to meringue...
- Mechanical action: whisking eggs, beating and creaming a batter...

Can you think of other dishes which use protein denaturation?

- Discuss how proteins are denatured
- Discuss how denaturation affects food

Slide 4

PROTEIN COAGULATION

Protein coagulation is a process in which the electrical charge of protein molecules changes.

This causes them to agglomerate – or bunch together.

Protein coagulation happens in the presence of heat, acid and salt.

It often happens together with denaturation, so it may be difficult to distinguish between the two.

During coagulation, water is trapped between the molecules of protein.

If a food product is overheated or cooked for too long, the protein will shrink and push out the water.

- Explanation of the process of protein coagulation
- Students to provide examples of protein coagulation

Slide 5

GLUTEN FORMATION

What is gluten?

It is a mixture of two proteins which occur naturally in some grains and cereals, such as wheat, barley and rye, and are responsible for the elasticity (such as oats which have been contaminated with it during production).

How is gluten formed?

flour + water = dough

Lower end proteins: Gliadin (the protein: gives it elasticity)

Gluten and gliadin: Gliadin and gliadin bond together and make a sticky dough

Salt and gluten: Salt and gluten: Glutamine chains help to trap air in dough, which allows it to rise.

For this reason, gluten-free flour will be crumbly and flat.

Watch this video to observe how gluten is developed during bread-making.

- Explain the process of gluten formation

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Slide 6

Learn

FOAM FORMATION

Foam is formed when air is trapped in a liquid mixture.

It is easy to make a foam out of eggs, as they are rich in protein.



When the egg is whisked or beaten, the protein fibres stretch out and trap the air between them.

This makes the mixture light and airy, and brightens its colour.

You can observe that if left alone, whisked egg will lose its texture and start to leak water.

This is because the protein fibres shrink back and push out the air, together with some water.

Go to the website to learn more about culinary foams.

- Explain the process of

Slide 7

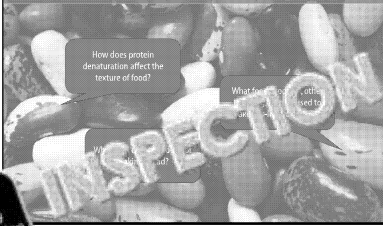

Discuss

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: PROTEINS

How does protein denaturation affect the texture of food?

What factors can cause protein denaturation?

What are the effects of protein denaturation on food?

- Take this opportunity to
- learn and how it impacts

Slide 8

Activity

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: PROTEINS


Investigate the gluten content of various types of flour.

50g plain flour
= 25 ml water

50g plain flour
= 25 ml water

50g self-raising flour
= 25 ml water

1. Roll out each mixture into a rough dough on a clean surface.
2. Cover each ball with cold water for 30 seconds.
3. Place each ball under running water and wash until the water is clear to indicate the starch.
4. What is left in your hand is gluten.
5. Separate all the water and other glass ball and weigh it.
6. Which type of flour produced the most gluten? Why?



- This is an optional practical that you want to do. Alternative students think may happen

Slide 9

Practice Question

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: PROTEINS

Give two functions of strong wheat flour when making bread. (2 marks)

Click to reveal answer!

- Students should write
- on a piece of paper and
- Click to reveal the answer
- mark or self-mark their

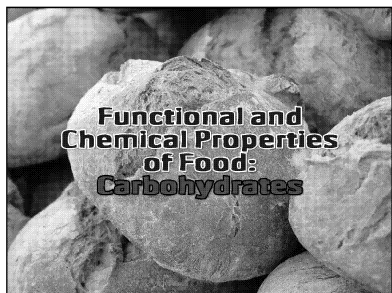
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PowerPoint 13: Carbohydrates

Slide 1



Slide 2

Learn

CARBOHYDRATES

Carbohydrates are organic molecules built of carbon, oxygen and hydrogen.
When a molecule of glucose is joined to another glucose molecule by a chemical bond, it forms a disaccharide.

If there are many of them, they form a long chain of a complex carbohydrate (usually hundreds and thousands of molecules).

Glucose (monosaccharide)

Fructose (monosaccharide)

Starch (polysaccharide)

Inspection COPY

Introduction to carbohydrate structure.

Slide 3

Learn

GELATINISATION OF STARCH

Starch is the complex carbohydrate present in starchy vegetables, such as potatoes and parsnips, maize, and cereals such as wheat. When cooked with water, starch will undergo the process of gelatinisation.

Starch does not dissolve in cold water. Instead, it forms a suspension of fine particles that are found at the bottom of the pan.

As the temperature rises to 60°C, the starch granules begin to swell.

When the temperature of 80°C, the starch granules have swollen and the mixture is thick.

Once the temperature is 100°C, the starch granules have burst and the mixture is very thick.

Check the video to see how it works.

Gelatinisation causes sauces, stews and soups to thicken.

- Discuss the process of gelatinisation.

Slide 4

Learn

DEXTRINISATION OF STARCH

Dry-cooking starch will cause it to dextrinise.
Dextrin is a short chain of a carbohydrate.
When dry-cooked, e.g. baked or toasted, the complex carbohydrates in the food will break down into shorter chains of dextrin.
That's why bread has a golden crust and becomes brown when toasted.
If bread is overcooked, the water will evaporate and cause the bread to burn.

Inspection COPY

- Discuss dextrinisation.

Slide 5

Learn

CARAMELISATION OF SUGAR

As you should already know, sugar is made of monosaccharides.
When cooked to very high temperatures, sugar molecules break down and release water.
That's why crystal sugar melts and becomes a liquid.
The newly formed liquid is called caramel.
If the caramel is cooked further, it will become darker and darker, reaching a point where it will burn.
The process is used to make sauces and sweets, but also occurs naturally in foods containing sugars, such as onion or carrot.

Inspection COPY

Introduction to caramelisation of sugar cooked at high temperatures.

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Slide 6

Discuss

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: CARBOHYDRATES

What temperature is needed to make a caramel, and why?

What kinds of sauce use gelatinisation to thicken?

What popular dishes use caramelisation, decomposition and gelatinisation?

How are conduction and convection used when cooking a sauce?

- Take this opportunity to discuss what you have learnt and how it impacts on the industry.

Slide 7

Activity

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: CARBOHYDRATES

Explain what happens to starch when heated with water to the following temperatures:

| | |
|--------|-----------------|
| 30 °C | Click to reveal |
| 60 °C | Click to reveal |
| 90 °C | Click to reveal |
| 100 °C | Click to reveal |

- Students to discuss in pairs or groups under such conditions.
- Click on a box to reveal the answer.

Slide 8

Practice Question

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: CARBOHYDRATES

A chef noticed the following problems:

- The sauce became lumpy.
- The bread is hard and burnt.

Suggest two potential causes for why each of these may have happened. (4 marks)

Click to reveal answer!

- Students should write their answers on a piece of paper and then discuss them.
- Click to reveal the answer and mark or self-mark their work.

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PowerPoint 14: Fats and Oils

Slide 1



Slide 2

Learn

HOW FAT IS BUILT

The chemical structure of a fat molecule is very important, as it determines its:

- texture (whether it is a solid or liquid)
- melting point
- behaviour

It is also important in determining the temperature at which a fat can be used in cooking. If a fat is too hard, it can be difficult to use.

Three chains of fatty acids make up each fat molecule. They are long chains of carbon atoms that they will turn away from water.

Shorter chains of fatty acids make for softer fats. Longer chains make for harder fats.

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Introduction to fat and

Slide 3

Learn

SHORTENING

Everybody loves shortbread, but have you ever wondered why it is called SHORTbread?

- Fat contains particles which form grains when mixed with water.
- When making shortbread dough, the fat is added in small amounts, so that the fat can't form grains.
- Fat is hydrophobic, so it will protect the grains from water, which is added to the pastry.
- As starch has no contact with water, the grains CANNOT develop in well-made only very SHORT fibres.
- It is this way the shortbread will stay crumbly, instead of becoming soft and dough-like.

- Explain why shortbread is called shortbread in this context

Slide 4

Learn

PLASTICITY

You already know that there are solid fats and liquid oils. But why is this the case?

Different fats melt and become liquid at different temperatures.

That is because in fact, all foods contain a mixture of different fats – some of them have shorter fatty acid chains, while some of them have very long chains.

The temperature at which fat turns into oil is called its **melting point**.

Oils have a very low melting point, and this is why they are liquid at room temperature.

As a result of their different melting points some fats are spreadable when taken from the fridge, while others are rock hard.

This phenomenon is called fat plasticity and helps to determine the culinary use of a fat.

- Explain what the plasticity of fat is

Slide 5

Learn

AERATION

When you make a sponge cake, you need to mix butter and sugar and beat them until fluffy.

But what does that mean?

- When beaten together, fat and sugar form little pockets, in which air is trapped.
- The longer you beat the mixture, the more air is trapped in the mixture.
- As you beat the mixture, the air bubbles become larger and the sugar crystals are apparent.
- This process is called aeration and is important in making thick, even and light cakes.

Watch the video to see why fat needs to be creamed with sugar.

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Explanation of the process of aeration and its application to a sponge cake

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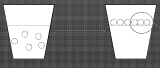


Slide 6

Learn

EMULSIFICATION

You already know that fat is hydrophobic. This means that if you add fat to water, they will not mix easily. Eventually, the fat will float on the surface.




That is because it will turn its hydrophobic part away from the water, and the hydrophilic part will face the water.

But many foods are not ABE mixtures of fat and water. How is that possible?

This is due to emulsification. Emulsifiers are capable of 'holding' together two molecules. Like this...

Such a mixture is called an emulsion.



- Description of the process


Slide 7

Learn

EMULSIFICATION

Watch this video to discover the most popular emulsions used in everyday life.

Read the document to discover what emulsifiers are commonly used in food industry.



Slide 8

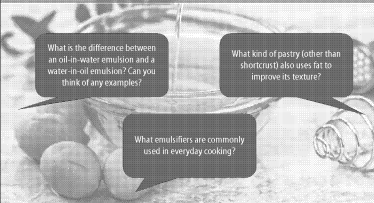
Discuss

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: FATS AND OILS

What is the difference between an oil-in-water emulsion and a water-in-oil emulsion? Can you think of any examples?

What kind of pastry (other than shortcrust) also uses fat to improve its texture?

What emulsifiers are commonly used in everyday cooking?



- Take this opportunity to discuss what you have learnt and how it impacts on food

Slide 9

Activity

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: FATS AND OILS

Link each chemical property of fat (right) to its function...

| | |
|---------------------------|--------------------------------|
| Ability to shorten gluten | Hydrophobic tail |
| Physical state | Length of the fatty acid chain |
| Immiscibility | Hydrophilic head |
| Plasticity | Double chemical bonds |
| Ability to form emulsions | Single chemical bonds |

- Students should work in pairs to explain how the chemical properties of fats relate to its culinary use.
- Click on a box in the left hand column to reveal the answer.


Slide 10

Practice Question

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: FATS AND OILS

The recipe for a basic shortcrust pastry requires the use of plain flour, butter, salt and cold water. Explain one function of fats when making shortcrust pastry. (2 marks)

Click to reveal answer



- Students should write their answer on a piece of paper and then click to reveal the answer. They can then mark or self-mark their answer.

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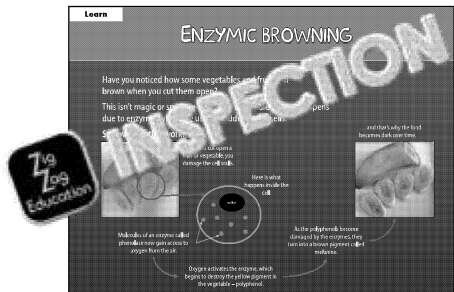


PowerPoint 15: Fruit and Vegetables

Slide 1

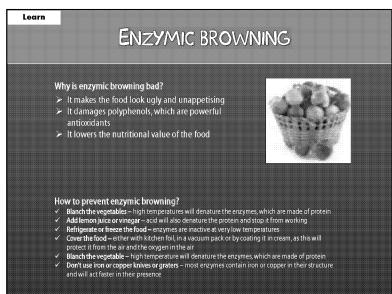


Slide 2



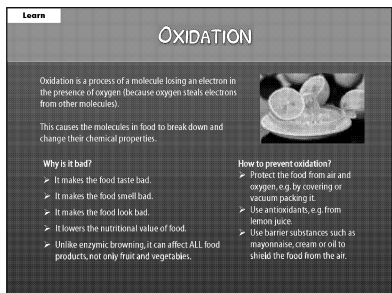
- Description of the process
- Students to come up with ways to prevent browning

Slide 3



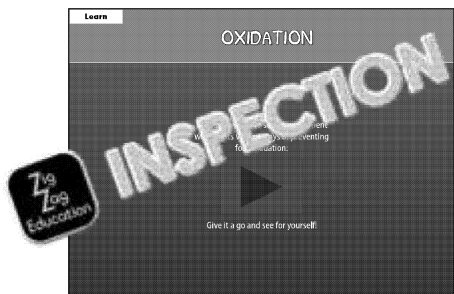
- Students to identify why it is bad
- Ideas for how browning can be prevented

Slide 4



- Explanation of the process and why it is bad for foods.
- Suggestions for how oxidation can be prevented

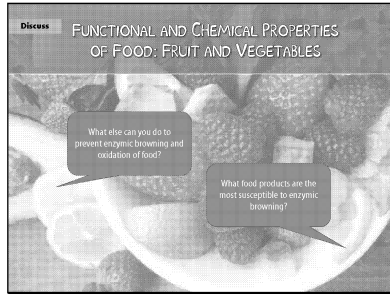
Slide 5



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Slide 6



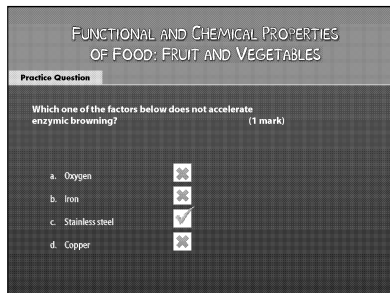
- Take this opportunity to discuss what you have learnt and how it impacts on food safety

Slide 7



- Students should draw a diagram to show the stages of enzymic browning
- Click to reveal the answers to the diagrams drawn by students

Slide 8



- Students should write their answers to the question on a piece of paper and show to the teacher
- Click to reveal the answers to the question mark or self-mark their answers

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PowerPoint 16: Raising Agents

Slide 1

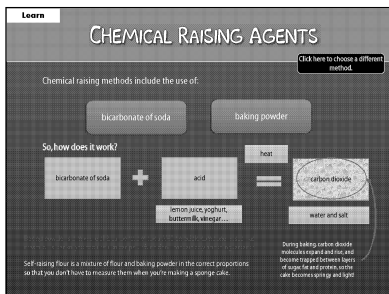


Slide 2



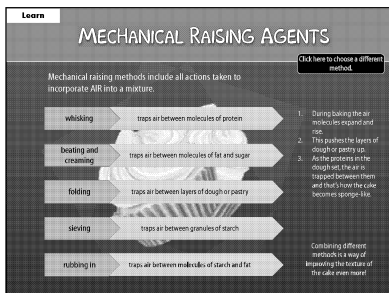
- Introduce raising agents
- Before revealing the answer, guess the method from the clues (each method is on a separate slide).

Slide 3



- Click black button to reveal 'Chemical Raising Agents?' slide.

Slide 4



- Click black button to reveal 'Mechanical Raising Agents?' slide.

Slide 5



- Click black button to reveal 'Biological Raising Agents?' slide.

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Slide 6

Learn

STEAM

Steam is a gas which is produced when water is heated over its boiling point.

The boiling point of water is... 100 °C

As steam is made of water, it works as a raising agent only in mixtures which contain a lot of water.

Can you think what dishes use steam as a raising agent?

As the water in the mixture is heated, it turns into steam.

The steam expands and rises, and pushes the layers of the mixture up.

As the cooking continues, the mixture sets.

```

graph TD
    water -- heat --> steam
    steam -- heat --> expand[expand and rise]
    expand --> rise[rise]
  
```

Slide 7

Discuss

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: RAISING AGENTS

What dishes use yeast as a raising agent?

What dishes use baking powder as a raising agent?

What dishes use bicarbonate of soda as a raising agent?

- Take this opportunity to discuss the different raising agents and how it impacts on the final product.

Slide 8

Activity

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: RAISING AGENTS

Watch the video below on how to make a Victoria sponge cake and identify the different raising methods used.

Click here to reveal the answers!

- Students should watch the video and identify the different raising methods used.
- Click to see the answers!

Slide 9

Practice Question

FUNCTIONAL AND CHEMICAL PROPERTIES OF FOOD: RAISING AGENTS

A baker noticed that his bread did not rise. Give two reasons why this may have happened. (2 marks)

Click to reveal answer!

- Students should write their answers on a piece of paper and then click to reveal the answer.
- Click to the reveal answer! mark or self-mark their answers.

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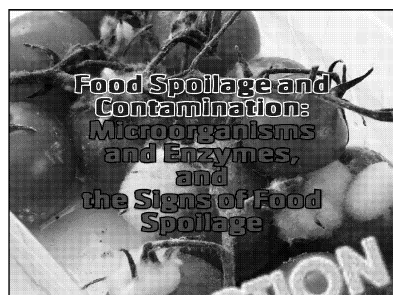
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3.4.1 Food spoilage and contamination

PowerPoint 17: Microorganisms and Enzymes, and the Signs of Food Spoilage

Slide 1



Slide 2

WHAT ARE MICROORGANISMS?

Microorganisms are tiny living organisms. In fact, they are so tiny that for a very long time people didn't even know they existed! That changed when the first microscope was invented, and the scientists could finally prove what they suspected.

Microorganisms include:

- Bacteria
- Fungi
- Viruses

Some of them are harmful and can cause diseases or poisoning. They are called **pathogens**. Others are good and can provide health benefits. They are called **beneficial** microorganisms.

- Introduction to what microorganisms are and each type of microorganism, including bacteria, fungi, and viruses.

Slide 3

WHAT CAUSES MICROORGANISMS TO GROW?

Microorganisms are alive and, like any other living creature, they need **FOOD** to live. Some of them (yeasts) prefer sugars while others (bacteria) will grow faster in the presence of **protein**. Like any other living beings, they also need **WATER**, so will grow faster in a **moist** environment.

Nobody likes to stay in the cold – and nor do microorganisms! When it's too cold for them, they become **dormant**. This means that they are still alive but cannot reproduce – they act as if they were asleep.

They grow and reproduce the fastest at temperatures between 5°C and 25°C, which is called the **danger zone** for the growth of microorganisms.

Food that is kept at other high temperatures (above 60°C) will kill the microorganisms, so the microorganisms are **dead**.

Any growth or reproduction process requires **time**. This is true also for bacteria, yeast and moulds. Some of them will multiply more quickly, some will multiply more slowly, but on average they will double in number every 20 minutes.

- Explain the factors needed for microorganisms to grow, i.e. food, water, and time.
- Clearly specify the danger zone for microorganism growth.

Slide 4

HIGH-RISK FOODS

When you know what speeds up the growth of microorganisms, it should be easy to identify high-risk foods, shouldn't it?

But... what are high-risk foods?

They are food products which have the perfect conditions for the growth of microorganisms.

Any examples?

- Discuss what high-risk foods are.
- Get students to consider examples of high-risk foods.

Slide 5

FOOD SPOILAGE

What happens if microorganisms grow in food?

- x The food can go sour and fizzy.
- x Fruit juice can become sour and have a foam on top.
- x Fruit can become sour and grow green, white or black 'fur' on it.
- x Fruit and vegetables can become very soft.
- x Bread can grow green, white or black 'fur'.
- x Cheese can grow white 'fur'.

Click here to watch a time-lapse video of mould growing!

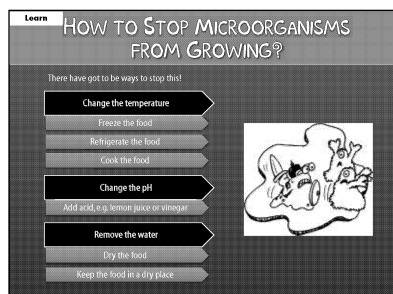
- Discuss food spoilage and its signs.
- Get students to consider examples of food spoilage and discuss the signs.

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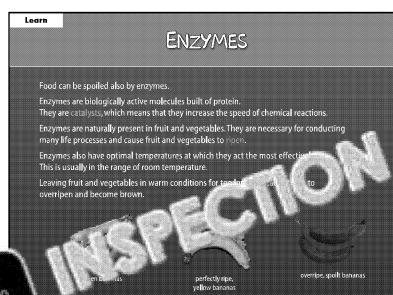


Slide 6



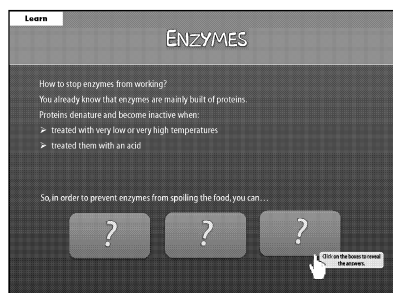
- Before revealing, see ways of stopping micro

Slide 7



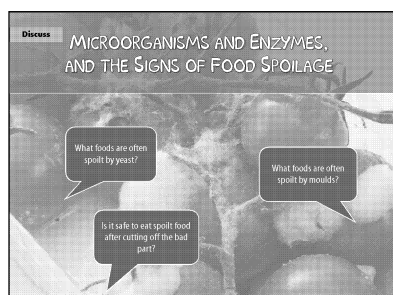
- Introduce enzymes.
- Suggest how enzymes affect food.

Slide 8



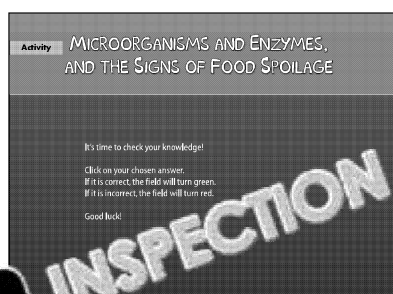
- Discuss why we may not want to stop enzymes working and how to do

Slide 9



- Take this opportunity to discuss what you have learnt and how it impacts

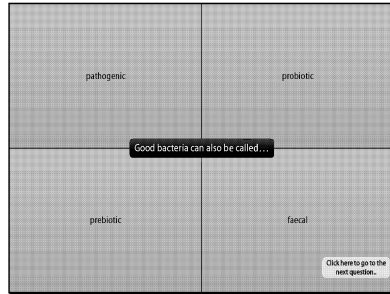
Slide 10



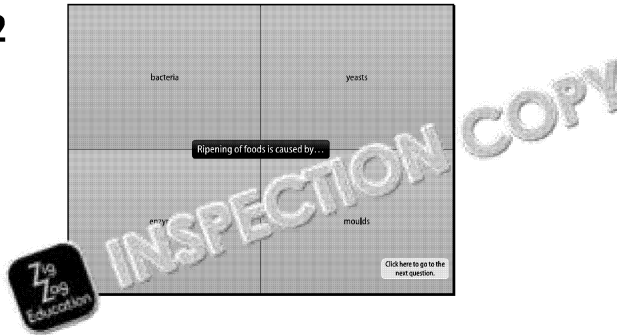
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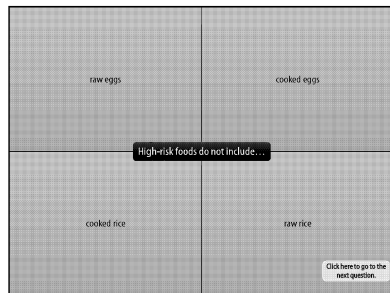
Slide 11



Slide 12



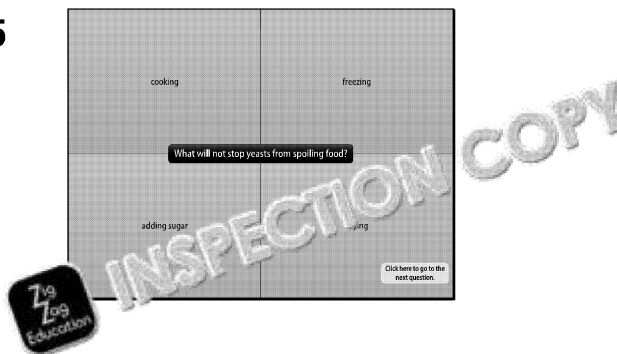
Slide 13



Slide 14



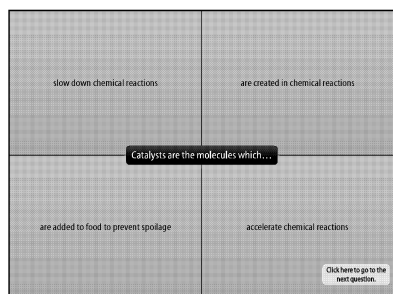
Slide 15



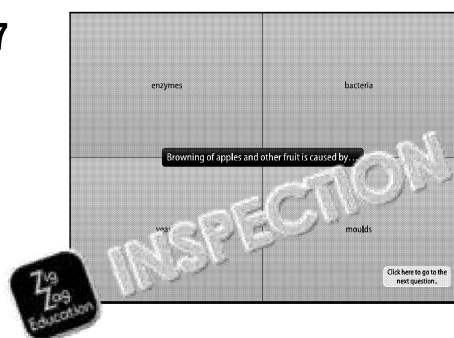
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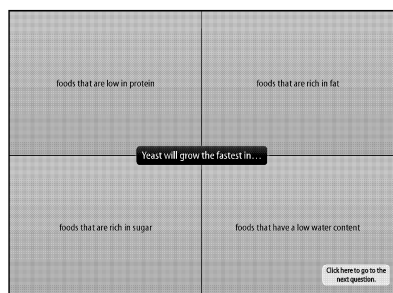
Slide 16



Slide 17



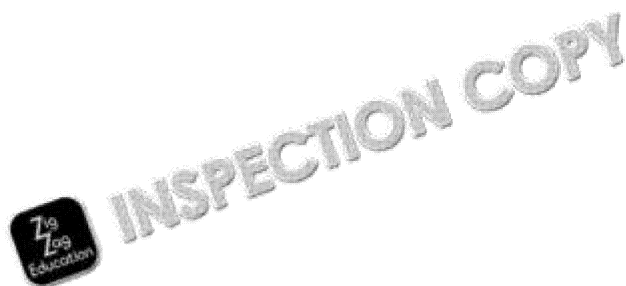
Slide 18



Slide 19



- Students should write their answers on a piece of paper and show them to the teacher.
- Click to reveal the answers or mark or self-mark their answers.



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PowerPoint 18: Microorganisms in Food Production

Slide 1



Slide 2



Recap microorganisms harmful.

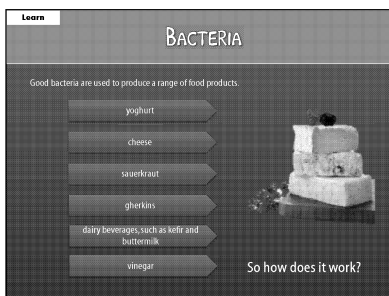
- Introduce the idea that some are useful for us as humans

Slide 3



- Introduce ways that microorganisms are useful in human life.

Slide 4



- See whether students can identify foods produced using bacteria

Slide 5



- Description of how yoghurt is made
- Explanation of the use of microorganisms

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Slide 6

Learn

BACTERIA

Cheese also uses bacteria in its production.



Watch the video to see how cheese is made.

- Milk is pasteurised to kill unwanted bacteria.
- Cheese and rennet are added to help set the milk.
- Curd is cut into a 1cm to 1.5cm cube.
- Salt is added.
- The cheese is shaped and the unwanted liquid is removed.
- The cheese is left to ripen until the optimal point.

- Highlight the steps for process uses bacteria.

Slide 7

Learn

MOULDS

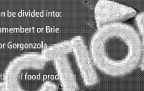
Camembert is one of the most popular cheeses in the world. It is made using a special variety of mould called *Penicillium camemberti*. The cheese is made like any other cheese, except that during production the mould is also added to it.

Cheeses manufactured with the use of moulds can be divided into:

- those covered with a mouldy 'skin', such as Camembert or Brie
- those with the mould inside, such as Stilton or Gorgonzola

Other varieties of mould are also used in food production:

- traditional sausages, such as salami
- soy sauce



- Foods that use mould.
- Students to think of other foods that use mould.

Slide 8

Learn

YEAST


Yeast is a tiny, single-cell fungus. In the presence of water, warmth and sugar, it ferments the sugar and produces carbon dioxide and ethyl alcohol.

```

graph LR
    A[sugar] --> C[carbon dioxide]
    B[water] --> C
    D[yeast] --> C
    E[alcohol] --> F[ethyl alcohol]
    
```

For this reason, yeast is used in the production of:

- alcoholic beverages, such as wine, beer and cider
- bread and other baked goods
- It is also the main ingredient of bioethanol




- Foods that use yeast.
- Students to think of other foods that use yeast.

Slide 9

Learn

YEAST

I'm sure you are aware that yeast is a key ingredient of bread-making. So let's have a look at how bread is made...



- The water, yeast and salt are mixed to form a dough.
- The dough is shaped.
- Yeast makes the dough rise when it is warmed, during proofing.
- The dough is placed in the oven to bake.
- The bread is cooked and does not need to rise.

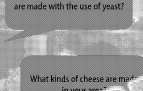
- Watch video and then discuss.

Slide 10

Discuss

MICROORGANISMS IN FOOD PRODUCTION

- What different baked products are made with the use of yeast?
- What factors will stop yeast from working?
- What kinds of cheese are made with the use of mould?
- What factors will stop mould from working?



- Take this opportunity to discuss what you have learnt and how it impacts on food production.

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Slide 11

MICROORGANISMS IN FOOD PRODUCTION

Activity

Make your own yoghurt at home.

1. Wash and sterilise 3 jars.
2. In separate mixtures heat 3 litres of milk to 85°C. Pour the milk into the jars and add 100g of yoghurt to each.
3. 200 ml natural milk + 100 g natural yoghurt
200 ml semi-skimmed milk + 100 g natural yoghurt
200 ml demerara milk + 100 g natural yoghurt
4. Allow the yoghurt to cool.
5. Compare the look, taste and consistency of each yoghurt.

Did the yoghurt come out as expected?

- If not, what might be the cause?
- If it did, are there any differences in flavour, appearance or texture?

- Practical activity is optional and discuss possible outcomes

Slide 12

MICROORGANISMS IN FOOD PRODUCTION

Practice Question

Name two dairy products that may be suitable for people suffering from lactose intolerance.

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- Students should write on a piece of paper and click to reveal the answer. Mark or self-mark their work.

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PowerPoint 19: Bacterial Contamination

Slide 1

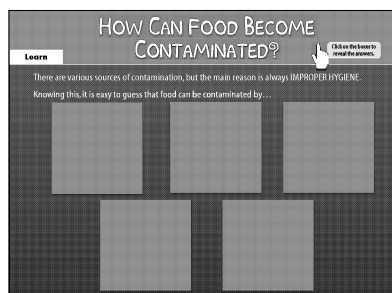


Slide 2



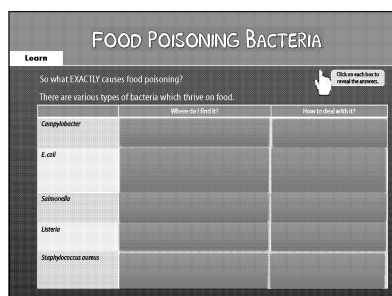
- Introduce contamination
- See whether students can identify food poisoning before revealing the answer.

Slide 3



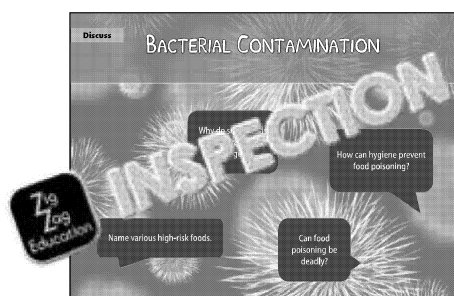
- See whether students can identify which food can become contaminated before revealing.

Slide 4



- Discuss each of the types of bacteria and allow students to answer before revealing the answer.
- Discuss how to deal with each type of bacteria before showing the answer.
- Discuss any personal experiences.

Slide 5



- Make this opportunity to discuss what they have learnt and how it impacts on food safety.

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Slide 6

Activity BACTERIAL CONTAMINATION

Match the types of bacteria with their main sources.
Note: They may be more than one source.

| | |
|-----------------------|--------------------|
| Campylobacter | Raw vegetables |
| E. coli | Poultry |
| Salmonella | Untreated water |
| Listeria | Dirty hands |
| Staphylococcus aureus | Unpasteurised milk |

Click on each bacterium to reveal the answers.

- Students should write down the bacteria that are usually contaminated by each source.
- Click on a bacterium or source to reveal the answers.

Slide 7

Practice Question BACTERIAL CONTAMINATION

Cross-contamination can cause food poisoning, allergic reactions and anaphylactic shock.

Give three ways in which cross-contamination can be avoided when preparing prawn mayonnaise sandwiches.

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- Students should write down three ways in which cross-contamination can be avoided when preparing prawn mayonnaise sandwiches.
- Click on a piece of paper and click to reveal the answers.
- Mark or self-mark their answers.

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3.4.2 Principles of food safety

PowerPoint 20: Buying and Storing Food

Slide 1



Slide 2

Learn

FOOD SAFETY

What does it mean to say that food is safe?

- It is free from dangerous bacteria.
- It is free from dangerous moulds or yeasts.
- It is free from toxins.
- It is free from heavy metals.
- It is free from substances which might affect health, e.g. allergens, preservatives or certain sweeteners.

For this reason it is very important to pay attention to many factors when buying food.

Is the food clean – covered with dust or dirt?

Is the packaging whole and intact?

How is the food stored in the shop?

What are the ingredients indicated on the label?

Is the food fresh?

Best before date vs Use by date

Interference with the mark indicates that the product is not safe to eat.

It applies to food quality. The use of the date is the responsibility of the manufacturer, although it is recommended to check the date before use.

Interference with the mark indicates that the product is not safe to eat.

It applies to food safety. The use of the date is the responsibility of the manufacturer, although it is recommended to check the date before use.

Deadly use must, starting from the date, control food with a safety system.

Eggs are labelled with a 'Best before date' mark.

- Discuss with students to each of the elements
- Students should try to identify what may be important when

Slide 3

Learn

STORING THE FOOD

Proper storage conditions are very important.

Why?

- They help to increase the shelf life of food.
- They help to maintain physical features of the food, such as appearance or texture.
- They help to maintain the nutritional value of the food.
- They help to protect the food from vermin or pests.
- They help to protect the food from sunlight and oxygen.
- They prevent or delay food spoilage.

So what are PROPER storage conditions?

- Discuss the importance of

Slide 4

Learn

STORING THE FOOD

You have brought your food home from your weekly shop, but where should you each item?

Top shelf: Store products such as cereals, pasta, tinned or frozen food.

Middle and top shelves: Other ready-to-eat foods in closed containers, e.g. cooked meat, salad, etc.

Bottom shelf: Raw meat, poultry and fish in closed containers or wrapped in plastic.

Door: Bottles of milk, juice or water, ketchup and mayonnaise, eggs.

Freezer: Raw and cooked meat, fish, poultry, etc. (not to be frozen during the week or for long periods).

Non-perishable food products: such as dry pasta, rice or cereal, should be kept in a cool, dry place. These products can be kept for a long time, but should be kept at a temperature which is usually in the range of 10-20°C.

Refrigerator: If possible, all food should be kept in closed containers to prevent leaks to prevent food from being spoiled.

- Assess students' understanding of the fridge.

Slide 5

Learn

FOOD: BUYING AND STORING FOOD

When you buy food, no matter the temperature, remember to cover it!

But why?

- a lid helps to keep off insects and other pests
- a lid protects the food from light, which could break down the vitamins and affect the nutritional value of food
- foil wrap or seal protects the food from oxygen, which could cause oxidation
- a lid helps to prevent tainting – or taking on the smell of other foods stored in the same area
- it prevents contact with other foods and helps to avoid cross-contamination

CROSS-CONTAMINATION

- Discussion of why it is important

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Slide 6


Learn

TEMPERATURE CONTROL

Temperature control during the storing and cooking of food is very important, as it disables or slows down the growth of microorganisms.

Microorganisms grow the fastest at temperatures from 5 °C to 63 °C.

These temperatures are called the



To make the food safe to eat and avoid food poisoning, the food needs to be cooked or reheated.

During cooking or reheating, the core temperature of the food must reach 75 °C. The core temperature may be checked with a temperature food probe.

- Recap the danger zone storing and reheating.

Slide 7

Learn

TEMPERATURE CONTROL: DEFOSTING FOOD

It is also very important to properly defrost, or thaw, food.

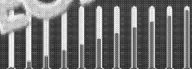
But why?

Properly thawed food will have roughly the same temperature throughout its volume. This will allow faster and even cooking, and reduce the risk of food poisoning.

Improperly thawed food can be still frozen inside, so it may not cook properly, and may still be cold inside while the outer part is already burnt.

The cold spots in the food will also pose a danger of food poisoning.

For that reason, it is best to thaw food in a bowl of water, or in a microwave, to ensure it is thawed evenly and not contaminating other foods.



- Discuss the importance of consequences if not done properly.

Slide 8

Learn

TEMPERATURE CONTROL: REHEATING FOOD

Why do we reheat food to 75 °C?


You might wonder why the core temperature needs to reach 75 °C. After all, bacteria die at temperatures above 63 °C, don't they?

That's correct, but...

When you cook the food, you kill most microorganisms. But when you chill it and store for some time, it goes through danger zone temperatures, so any microorganisms which have found their way into your cooked food can begin to multiply.

When you reheat the food, it goes through the danger zone temperatures again, so the microorganisms multiply even faster!

Reheating the food to 75 °C is then a guarantee that all microorganisms are killed and the food is safe to eat.

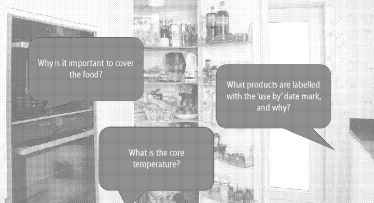


- Continue discussion about reheating food.
- Discuss the consequences if not done properly.

Slide 9

Discuss

BUYING AND STORING FOOD



- Take this opportunity to discuss what you have learnt and how it impacts on food safety.

Slide 10

Activity

BUYING AND STORING FOOD

Put the foods in correct places in the fridge.



- Students should write down where the listed food products should be stored.
- Some of them can be stored at room temperature.
- Eggs are typically kept in the fridge, the most likely place to find them at low temperatures, so it is best to keep them out of the fridge.
- Cheese can also be kept in the fridge, but store it in the salad drawer and moist and not submerged in liquid.
- Click on a chosen product and see where it can/should be stored.

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Slide 11

BUYING AND STORING FOOD

Practice Question

Which one of the following statements is true?

- a. The danger zone temperature range is between 5 °C and 75 °C. ☐
- b. The chilled temperature range is between -5 °C and +5 °C. ☐
- c. Foods labelled with the 'use by' date mark can be safely stored at ambient temperature. ☐
- d. Foods labelled with the 'best before' date mark can be safely stored at ambient temperature. ☒

- Students should write on a piece of paper and then click to reveal the answer mark or self-mark their
- Click to reveal the answer mark or self-mark their

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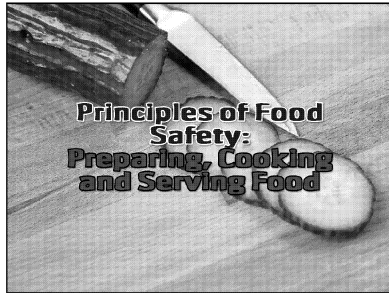
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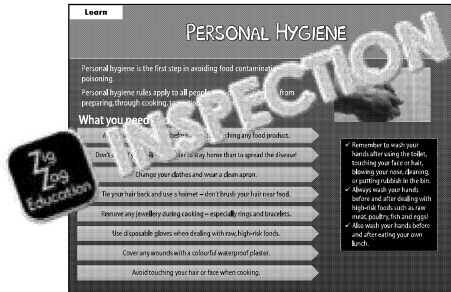


PowerPoint 21: Preparing, Cooking and Serving Food

Slide 1



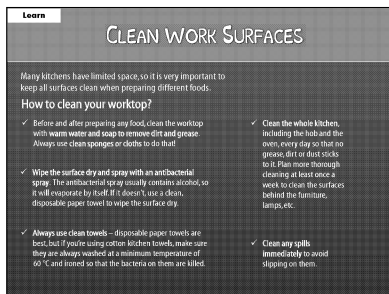
Slide 2



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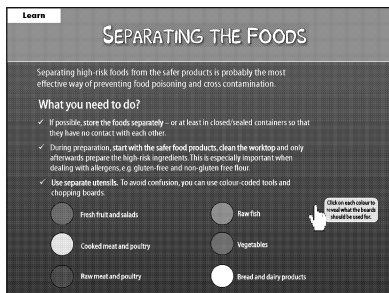
- Discuss the importance of personal hygiene.
- Recap the steps of washing hands to be prompt.

Slide 3



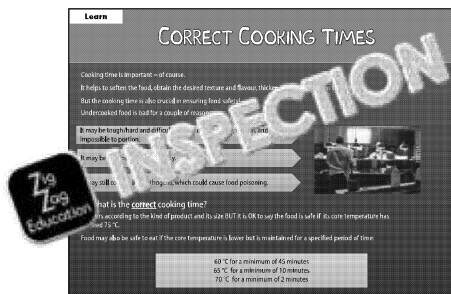
- Assess students' knowledge of clean work surfaces and then reveal the answers.

Slide 4



- Students should guess the colour of the food and then reveal the answers.
- Click on each colour to start a discussion.

Slide 5



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- Explain correct cooking times.

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Slide 6

Learn

FOOD TEMPERATURE PROBE

A food temperature probe is an electronic device used to measure the inner temperature of a food product during cooking.

It is very useful as it allows you to assess whether the food is already cooked and safe to eat or whether it needs some more cooking.

How to use a food temperature probe?

1. Clean the probe and disinfect it with an alcohol wipe and a clean, disposable paper towel.
2. Switch on the probe and make sure it shows the correct temperature.
3. Insert the probe into the centre or the thickest part of the food in a place away from bones or joints of meat.
4. Wait until the temperature stabilises.
5. If the temperature reaches 75 °C, the food is ready to eat.
6. If the temperature is lower, remove the probe, clean and disinfect it, and continue cooking.
7. Repeat steps 1-4 until the correct temperature is reached.

You can do so by checking the temperature of pure, boiling water (100 °C).

Make sure the tip doesn't touch the baking tin, the microwave is below.

Gently remove the probe and clean and disinfect it.

Watch the video to see how to use a food temperature probe.

- Discussion of the importance of food temperature during cooking
- List of the steps for how to use a food temperature probe
- Discuss the importance of food temperature followed, e.g. why clean

Slide 7

Learn

FOOD HYGIENE RATING

The Food Hygiene Rating Scheme is provided by the Food Standards Agency.

It is very important that restaurants and shops apply these rules, as it helps to keep the food safe and helps the customers to choose where to eat out or buy their takeaway.

Click on the link to learn more about the Food Hygiene Rating Scheme.



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Slide 8

Discuss

PREPARING, COOKING AND SERVING FOOD

What is meant by 'appropriate care with high-risk foods'?

Why is the appropriate temperature so important?

How does colour-coding of utensils help to avoid cross-contamination?

Is the Food Hygiene Rating Scheme really necessary?

- Take this opportunity to discuss what you have learnt and how it impacts on food safety

Slide 9

Activity

PREPARING, COOKING AND SERVING FOOD

Match the food with a chopping board to apply the rules of colour-coding.

| | | |
|-----------------|------------------|--------------------|
| wholemeal bread | whole, raw trout | raw chicken breast |
| cooked carrot | bok choy cabbage | grilled beefsteak |
| silken tofu | cooked broccoli | smoked salmon |

Click on each food to reveal its answer.

raw chicken breast

grilled beefsteak

whole raw trout

smoked salmon

wholemeal bread

silken tofu

- Students should match the food with a chopping board on paper.
- Click on a chosen food to reveal its answer.

Slide 10

Practice Question

PREPARING, COOKING AND SERVING FOOD

Explain the reasons why when reheating food, it should reach 75 °C. (4 marks)

Click to reveal the answer.



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- Students should write their answer on a piece of paper and then click to reveal answers or self-mark their answers

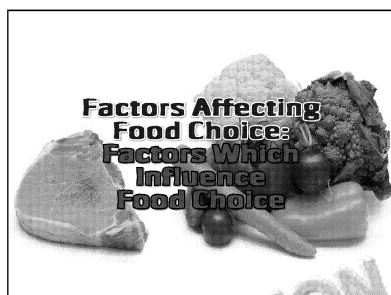
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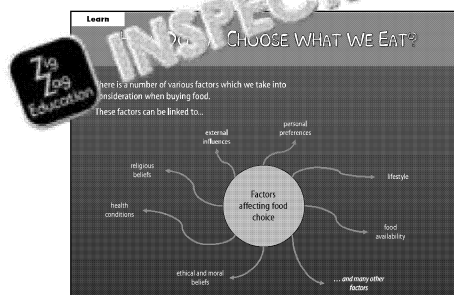
3.5.1 Factors affecting food choice

PowerPoint 22: Factors Which Influence Food Choice

Slide 1

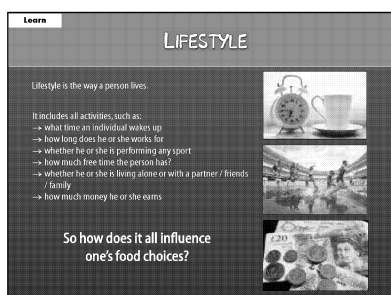


Slide 2

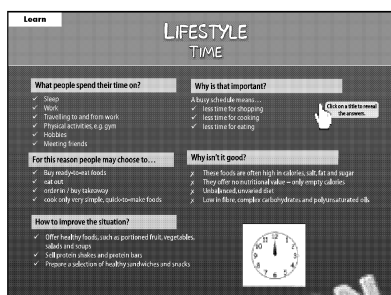


- Outline factors that affect food choice

Slide 3

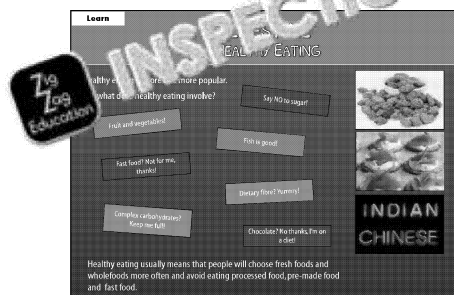


Slide 4



- Students to discuss in groups and can discuss a different lifestyle and then share their thoughts

Slide 5



- Discuss what 'healthy eating' involves
- What constitutes an unhealthy diet

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Slide 6

Learn

LIFESTYLE PHYSICAL ACTIVITY LEVEL

PAL, or physical activity level, is simply a numeric value which reflects how active a person is. Together with BMR (basal metabolic rate) it makes TEE (total energy expenditure).

$BMR + PAL = TEE$

The more active the person, the more energy he or she needs to function properly. The less active the person, the less energy is needed to function properly and maintain body weight.

If the person eats too much he or she will gain weight.

If the person eats too little he or she will lose weight.

Providing as much energy as needed helps to maintain a stable body weight.

- Discuss what happens consumed and not end
- Discuss what happens expended and not end

Slide 7

Learn

LIFESTYLE TIME OF DAY

Another factor which affects food choices is time of day. After all, it's hard to imagine eating pizza for breakfast and yogurt for dinner!

Food patterns differ between countries but usually there are some food products which are typical of a given meal. Can you say what British people typically eat?

Breakfast: _____

Lunch: _____

Dinner: _____

Click the box to reveal the answer.

- Get students to discuss each meal, including w breakfast.

Slide 8

Learn

MONEY

Money is an important factor which influences many human behaviours, including food choices. It usually includes two aspects ...

The cost of food

Family income

Click the box to reveal the answer.

- Students may discuss influence food choices
- Click on a green box to

Slide 9

Learn

CELEBRATION AND OCCASIONS

People around the world celebrate different occasions with food. Does this differ from their normal diet?

Yes! Usually the food eaten during various festivals is ...

- served in larger quantities, e.g. more dishes, a five-course meal
- specific to the occasion, e.g. birthday cake, choler for Shrove Tuesday
- more fatty or sugary than usual, or better ingredients are used
- served with alcohol, such as champagne

The occasions include ...

- birthdays
- weddings
- anniversaries
- funerals
- christenings
- religious occasions such as Easter or Good Friday
- retirement or graduation parties

Click on the box to reveal the answer.

- Get students to discuss during celebrations an

Slide 10

Learn

PERSONAL PREFERENCES

People often have an inborn predisposition to prefer sweet foods. Is this an advantage or disadvantage as it helps to distinguish good, nutritious foods from those which are not?

However, it is usually safe to eat little, sour or salty foods, and many people prefer those to the sweet ones.

The taste buds are trained to recognise different flavours, and it is very important to eat a varied diet from early childhood.

The more new flavours a person tries in childhood, the greater the probability that he or she will be open to trying new foods in his or her adult life.

This is because people tend to choose food they are familiar with.

It is important not to treat sweets or snacks as a prize as this can lead to overeating and obesity.

Living in a partnership with others, even when eating, can influence food choices.

- Discuss the personal p have.
- Discuss how personal age.

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Slide 11

Learn

ENJOYMENT

As for celebrations, people like to choose certain foods for enjoyment. Usually these choices are also affected by culture. Examples include:

- ✓ eating popcorn at the cinema
- ✓ eating candyfloss in an amusement park
- ✓ eating toffee apples at Halloween



These foods are very often sweet, fatty or salty, so it's important that they are not eaten too often.

- What other foods are eaten for enjoyment in your country this year and for what occasions?

Slide 12

Learn

FOOD AVAILABILITY AND SEASONALITY

Food availability depends on many different factors. Generally, food is available in abundance in rich, developed countries, and may be unavailable in poorer, developing ones. Food availability may also be dependent on where in the country a person lives.

Living close to large supermarkets usually increases the availability of food, both in quantity and quality.

Living in the countryside may limit the choice to small convenience stores.

Food availability often depends on the season – some foods are only offered in larger amounts and at cheaper prices at certain times of the year. International transport and importation can also affect food availability. As an example, coffee can be drunk in many countries, but it is only grown in a few.



- Discuss examples of food availability in your country at different times of the year.

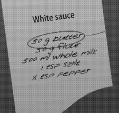
Slide 13

Learn

HOW TO COST RECIPES

Calculating how much your meal cost might be very important, especially if you don't have much to spend. But how to do it?

Begin by finding a recipe.



1. How much is a whole block of butter?
2. The price of what you need is... $\frac{\text{cost of portion} \times \text{price of the whole block}}{\text{portion of portion}} = \text{cost of 100g butter block}$
3. Repeat the same calculation for each ingredient.
4. Add the values to obtain the total cost of the meal/portion.

If the total cost is too high, you can:


- try to exchange the more expensive ingredients for cheaper ones (e.g. pasta instead of a dressing for a chicken salad)
- try to modify the amount of the more expensive ingredients in the recipe (e.g. use less salmon in a quiche)

- Optional: this could be a good activity for students to do at home.

Slide 14

Discuss

FACTORS WHICH INFLUENCE FOOD CHOICE



What other factors may force you to modify a recipe?

Are there ways of increasing food availability worldwide?

How do people use food to celebrate different occasions?


- Take this opportunity to discuss the factors you have learnt and how it impacts on food choice.

Slide 15

Activity

FACTORS WHICH INFLUENCE FOOD CHOICE

Calculate the cost of the recipe for a soup below.



| Ingredient | Amount needed | Price | Total cost |
|---------------------|---------------|------------------|------------|
| Cooked ham | 200 g | £ 11.5 per 1 kg | |
| Tomato | 200 g | £ 1.00 per 1 kg | |
| Swiss potatoes | 200 g | £ 2.00 per 1 kg | |
| Chicken stock cubes | 1 piece | £ 1.20 per 5 pcs | |
| Unspiced milk | 300 ml | £ 4.00 per 1 l | |
| Water | 350 ml | £ 0.20 per 1 l | |
| Black pepper | 5 g | £ 7.00 per 1 kg | |

What is the cost of a single portion?

- Students should calculate the cost of the recipe.
- Click on the box to reveal the answer.

Slide 16

Practice Question

FACTORS WHICH INFLUENCE FOOD CHOICE

Which one of the following is untrue about food choices? (1 mark)

- The availability of food depends on where a person lives.
- People often choose more sugary foods to celebrate with.
- People often choose to drink alcoholic beverages.
- The seasonality of food doesn't define food choices.

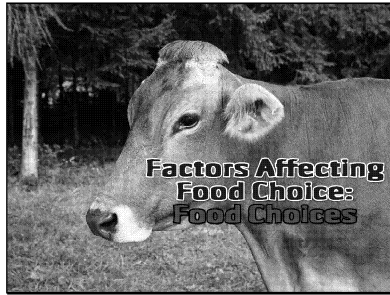
- Students should write their answer on a piece of paper and mark it.
- Click to reveal the answer and mark or self-mark their answer.

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PowerPoint 23: Food Choices

Slide 1

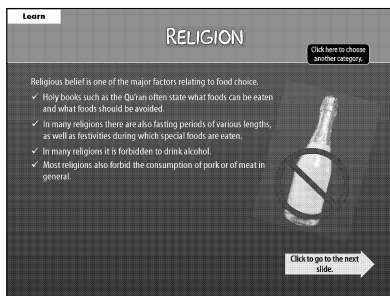


Slide 2



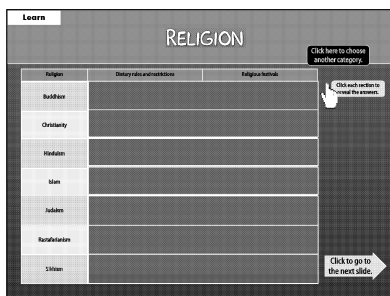
Click on each option to
(on separate slides).

Slide 3



- Explanation how religious belief affects food choice.
- Discussion of how different religions affect food choices.
- Can any students in the class identify the food choices of their religion?

Slide 4



- Students should work in groups to discuss the differences between religions.
- Each group can discuss and share their thoughts in a presentation.
- Click on a box to reveal the answer.

Slide 5



Watch the videos to see how people celebrate.

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Slide 6

Learn

ETHICAL AND MORAL CHOICES

Ethical and moral beliefs play larger role in food choices than ever.

Click here to choose another category.

These choices may be justified by:

- caring about animal welfare
- fair trade
- buying locally
- eating organic food
- wanting to avoid genetically modified foods

Avoided welfare is connected with eating conditions, how animals are kept, whether they are routinely treated with antibiotics.

Fair trade helps to improve farmers and workers' developing countries, improve living and working conditions and allow better development.

Buying locally means that more money goes to the local farmers and communities, allows efforts to develop it also means less transport and a lower carbon footprint.

Choosing organic food offers others by the need to not use harmful pesticides to support sustainable food production, without damaging the environment.

People may choose not to eat GM food because of environmental and health issues associated with it.

Click to go to the next slide.

- Discuss the ethical and moral choices individuals make.
- Discuss whether any student knows anyone who does

Slide 7

Learn

HEALTH

Click here to choose another category.

Food intolerances and allergies are very important when choosing what to eat. Choosing wisely helps to avoid unpleasant side effects such as bloating, stomach cramps and diarrhoea, and even more serious consequences such as anaphylactic shock.

Food intolerance VS Food allergy

A reaction of the digestive tract to a food product. Usually caused by a lack of enzymes, which would break the food down.

A reaction of the immune system to a food product. Caused by an allergic reaction to a food product.

Causes bloating, stomach cramps, diarrhoea. Most often caused by intolerance to lactose. Symptoms are usually mild and disappear when the food is no longer eaten.

Causes anaphylactic shock, which is a severe allergic reaction. Symptoms are usually severe and can be life-threatening. Symptoms include swelling, hives, difficulty breathing, and a drop in blood pressure.

Click to go to the next slide.

- Students should try to identify food intolerances before you reveal the

Slide 8

Discuss

FOOD CHOICES

Are allergens easy to avoid?

How does buying only local produce affect the diversity of the diet?

Do people still follow the dietary restrictions stated by religion? If not, why is this?

Is it easy to modify a recipe to make it suitable for different religious groups?

- Take this opportunity to discuss what you have learnt and how it impacts

Slide 9

Activity

FOOD CHOICES

Traditional cottage pie recipe contains:

- Beef mince
- Onions
- Carrots
- Potatoes
- Beef stock
- Flour
- Parmesan
- Swiss chard
- Eggs
- Milk

Decide which groups of people mentioned in this lesson can and cannot eat it.

Click on 'yes' and 'no'.

YES

- Christians — eating meat is permitted.
- Muslims — eating meat is permitted as long as it is halal.
- Hindus — eating meat is permitted as long as it is not beef.
- Jains — eating meat is not permitted.
- Vegetarians — eating meat is not permitted.
- Vegans — eating meat is not permitted.
- People with allergies — eating meat is not permitted.
- People with intolerances — eating meat is not permitted.
- People with religious restrictions — eating meat is not permitted.

NO

- Buddhists — if they have to cook it themselves.
- Hindus — because it contains beef.
- Jains — because it contains meat.
- Muslims — because it contains pork.
- Christians — because it contains alcohol.
- Vegans — because they don't eat any animal products.
- People with allergies — because it contains milk.
- People with intolerances — because it contains milk.
- People with religious restrictions — because it contains alcohol.

- Students should read through the slides again and decide who could or couldn't eat the food.
- Click on the YES or NO button.

Slide 10

Practice Question

FOOD CHOICES

Joe ordered pitta bread with olives for a starter, tabbouleh (made from couscous) with chicken, cucumber and wheat sprouts for a main, and pancakes with golden syrup for dessert. He drank malt beer with it.

Give three reasons why this meal is not suitable for his friend who suffers from coeliac disease. (3 marks)

Click to reveal.

- Students should write down the reasons on a piece of paper and then click to reveal the answers. They can mark or self-mark their

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PowerPoint 24: Food Labelling and Marketing Influences

Slide 1

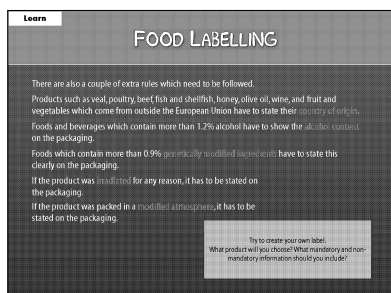


Slide 2



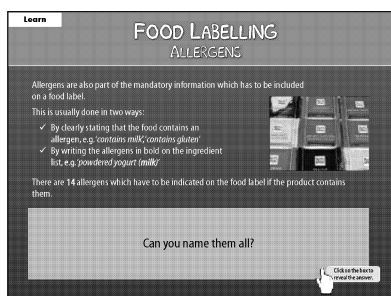
Discuss the importance on food labels.

Slide 3



- Optional task: students label using information

Slide 4



- Students should try to the previous lesson.
- Students should list all
- Click to reveal the answer them?

Slide 5



You could use example exemplify the traffic light

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Slide 6

Learn

NUTRITIONAL LABELLING

Among the non-mandatory items of information you can find on a food label, some of the most common are nutrition and health claims.

Nutrition and health claims have to be clear and based on current scientific knowledge, and they have to be agreed by European Union law.

Nutrition claim

A statement that a food product contains certain nutrient.

e.g. low fat, high fibre, contains vitamins

Health claim

A statement that a food product has positive impact on health.

e.g. cholesterol lowers the risk of heart disease, reduces the risk of heart disease.

Click on the icons to access the related EU Register of Nutrition and Health Claims.

- Discuss differences between nutrition and health claims.
- Can students think of any other examples of nutrition and health claims?

Slide 7

Learn

MARKETING INFLUENCES

Marketing specialists use a range of different techniques to convince people to buy more products and so increase sales.

Some of these techniques include:

BOGOF

Buy one get one free

This technique involves offering a second product of the same type as the first product for free or at a reduced price.

Special offers

Special offers involve offering a product at a lower price than the normal price for a limited time.

Points of sale

Points of sale are locations where products are sold. This is a place where a customer can see the product and buy it. This encourages people to buy the product because they can see it.

Click on the icons to access the related EU Register of Nutrition and Health Claims.

- Discuss marketing influences and how they can influence what we buy.

Slide 8

Discuss

FOOD LABELLING AND MARKETING INFLUENCES

Is traffic light labelling effective and helpful when making food choices?

What other marketing techniques do you know of?

Is it easy to find all the necessary information on a food label?

Are children and teenagers susceptible to marketing? Is there anything else that influences their food choices?

- Take this opportunity to discuss what you have learnt and how it impacts on your choices.

Slide 9

Activity

FOOD LABELLING AND MARKETING INFLUENCES

Analyse the labels of these products and colour-code the traffic lights to indicate whether the products are high, medium or low in the given nutrients.

| Product | Per 100g |
|--------------|----------|
| Energy | 1600 kJ |
| Fat | 10.0 g |
| Carbohydrate | 48.0 g |
| Sugar | 10.0 g |
| Fibre | 1.0 g |
| Salt | 0.5 g |

| Product | Per 100g |
|--------------|----------|
| Energy | 1600 kJ |
| Fat | 10.0 g |
| Carbohydrate | 48.0 g |
| Sugar | 10.0 g |
| Fibre | 1.0 g |
| Salt | 0.5 g |

Click on the labels to reveal the answers.

- Students should complete the activity on slide 5, and colour-code the labels.
- Click on the labels to reveal the answers.

Slide 10

Practice Question

FOOD LABELLING AND MARKETING INFLUENCES

Which one of the following food products does not contain a product classified as a major allergen? (1 mark)

a. Sushi

b. Bolognese sauce

c. Hummus

d. Waldorf salad

Click on the labels to reveal the answers.

- Students should write their answer on a piece of paper and then click to reveal the answer. They can mark or self-mark their answer.

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3.5.2 British and international cuisines

PowerPoint 25: British and International Cuisines

Slide 1

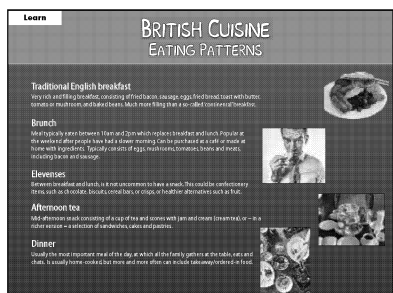


Slide 2



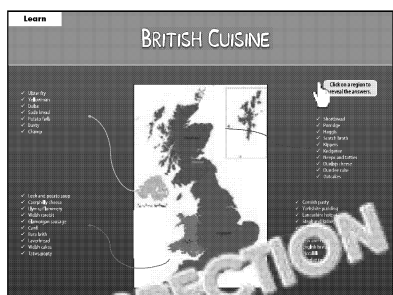
- Students to provide examples of what they have tried.
- Students to suggest what is like, in terms of the

Slide 3



- Use examples of student work to identify differences and similarities

Slide 4



- Students to list foods/region.
- Click to reveal answers
- Students to find out where homework or during the to the Internet.

Slide 5



- Discuss Italian cuisine
British cuisine.

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Slide 6

Learn

INTERNATIONAL CUISINES

SPAIN

Ingredients:

| | |
|------------|----------|
| Rice | Tomatoes |
| Pork | Onions |
| Garlic | Milk |
| Olives | Almonds |
| Peasants | |
| Pork | |
| Onions | |
| Peasants | |
| Hot pepper | |

Serving methods:

Usually on large plates for everybody to share
Partially served on large plates and in portions

Eating patterns:

Breakfast: traditional Spanish variety of coffee or hot juice, sandwiches, bread rolls with topping or sweetened cheese
Lunch: usually rich and filling, consisting of several courses
After the meal people enjoy a relaxing afternoon coffee
Dinner is usually lighter and more elegant

Paella in a paella

Gazpacho - cold tomato soup

Meatballs - fast food and a popular dish

- Discuss Spanish cuisine and British cuisine.

Slide 7

Learn

INTERNATIONAL CUISINES

CHINA

Ingredients:

| | |
|------------|---------|
| Rice | Pork |
| Vegetables | Chicken |
| Onions | Carrots |
| Garlic | |
| Hot | |
| Spice | |
| Onions | |
| Hot | |
| Spice | |
| Onions | |

Serving methods:

Many Chinese dishes are served in small bowls for everybody to share
Usually very colorful and beautifully presented

Eating patterns:

All courses are served at once
A long meal
Food is usually eaten with chopsticks

Spring rolls with pork and vegetables

Long with vegetables and pork

- Discuss Chinese cuisine and British cuisine.

Slide 8

Learn

INTERNATIONAL CUISINES

INDIA

Ingredients:

| | |
|------------|----------|
| Vegetables | Potatoes |
| Onions | Peas |
| Garlic | Butter |
| Onions | Butter |
| Onions | Butter |
| Onions | Butter |
| Onions | Butter |
| Onions | Butter |
| Onions | Butter |
| Onions | Butter |

Serving:

Many different dishes are served in small bowls for everybody to share
Usually very colorful and beautifully presented
Food is eaten with the right hand while the left hand is used to serve

Eating patterns:

Dinner is the most important meal of the day
The whole family participates
Food is eaten with the right hand while the left hand is used to serve

Chicken curry with vegetables and potatoes

Chicken curry with vegetables and potatoes

- Discuss Indian cuisine and British cuisine.

Slide 9

Learn

CUISINE

TRADITIONAL AND MODERN VARIATIONS

Recipes, presentation styles and eating patterns change with time. Why is this?

- Due to busy lifestyles
- Old recipes are often very time consuming, so we amend them to spend less time in the kitchen.
- Due to unavailability of ingredients
- Many ingredients popular 200 or 100 years ago are not available any more, so we have to use substitutes.
- Because of healthy eating
- Traditional recipes often use a lot of fat to follow the current nutritional guidelines, we replace it with healthier oils and use low-fat cooking methods.
- Due to ethical and moral reasons
- Traditional foods are often based on meat, as more people become vegetarian or vegans, the recipes are modified to suit their needs better.

- Students to discuss in changed over time.

Slide 10

Discuss

BRITISH AND INTERNATIONAL CUISINES

What other cuisines do you know? Are they very popular worldwide?

Do people choose to eat traditional food or do they prefer to modify it?

What other...

- Take this opportunity to learnt and how it impacts

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Slide 11

BRITISH AND INTERNATIONAL CUISINES

Activity

Match each food product or dish with its country of origin.

| | |
|----------------------|---------------|
| churros | Mexico |
| goulash | Vietnam |
| ceviche | Thailand |
| chicken tikka masala | Mexico |
| sushi | Italy |
| pad thai | Great Britain |
| kimchi | Japan |
| tagine | Spain |



- Click on the food to reveal its country of origin.
- An alternative version of the activity is available with each place on the map.

Slide 12

BRITISH AND INTERNATIONAL CUISINES

Activity

Imagine that you're visiting India. Write a postcard to your parents or friends and describe what foods you have tried so far.



Dear Mum and Dad,
India is wonderful! Every day I discover new food!
new! For example, I tried...

Slide 13

BRITISH AND INTERNATIONAL CUISINES

Practice Question

Which one of the following is not characteristic of British cuisine? (1 mark)

| | | |
|-------------|-------------------------------------|---|
| a. Couscous | <input checked="" type="checkbox"/> | It comes from Morocco, or Arab cuisine. |
| b. Lamb | <input type="checkbox"/> | It is a traditional part of British cuisine. |
| c. Thyme | <input type="checkbox"/> | It is also a popular herb in other cuisines, such as Italian. |
| d. Potatoes | <input type="checkbox"/> | Although they came from South America, they are now a staple food in British cuisine. |

- Students should write their answer on a piece of paper and show it to the teacher.
- Click to reveal the answer and mark or self-mark their response.

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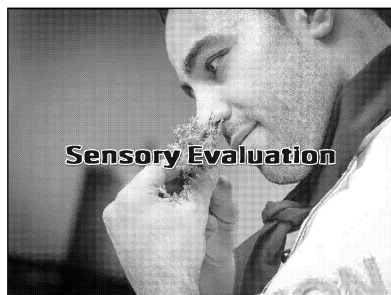
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3.5.3 Sensory evaluation

PowerPoint 26: Sensory Evaluation

Slide 1



Slide 2

Learn

SENSES

Your body is full of nerves and receptors which carry electrical signals and allow you to feel, smell, taste, see or hear things. These receptors are specialised and are located in the:

| | | |
|--------|----------------------|--|
| skin | the sense of touch | Allows you to feel the surface texture (rough, smooth, hot, cold, pressure and pain) |
| eyes | the sense of sight | Allows you to see shapes and colours |
| ears | the sense of hearing | Allows you to hear even very quiet and very loud sounds |
| nose | the sense of smell | Allows you to recognise smells |
| tongue | the sense of taste | Allows you to distinguish between different tastes |

- Use experiences to help us to evaluate the food

Slide 3

Learn

TASTING THE FOOD

To taste the food properly your body uses two systems:

- Taste buds located on your tongue
- The olfactory system, which is built of many receptors located in your nose

How does it work?

Your tongue recognises five tastes: sweet, salty, acidic and bitter and the fifth taste – umami – which can be described as 'savory'.

When you eat, microscopic molecules of the food fill the air. They find their way into your nostrils, where they meet the olfactory receptors. The receptors send electric signals to the brain, which recognises the smell and helps you decide whether you like it or not.

The combined sense of taste, aroma and mouthfeel are known as the **flavour** of the food.

Watch the video on how taste and smell work together!

Can you think of foods which are rich in the senses listed?

- Explain how we taste.

Slide 4

Learn

IMPORTANCE OF THE SENSES

To decide whether or not you like a food when you use all of your senses.

| | | |
|----------|--|--|
| taste | The most obvious one helps you to decide whether you prefer sweet or savory foods. | |
| smell | Your nose can differentiate over one trillion (!) different odours. The smell helps you to decide whether you like the food before you even try it! | |
| hearing | Most people prefer crunchy foods, as it usually means that the product is fresh and juicy. | |
| eyesight | Helps to decide whether the food is appealing or not. Nobody likes ugly food, do they? | |
| touch | Helps to assess the mouthfeel, e.g. if the food melts in the mouth. It also helps to assess whether the food is spicy, as heat is actually a pain sensation! | |

Click on a sense to learn more.

- Discuss what students can use their senses for when it comes to food
- Discuss which sense we use most often for a food item, e.g. an off-p...

Slide 5

Learn

SENSORY TESTING METHODS

Food scientists often conduct sensory testing panels. These are a very useful tool.

- They help to assess whether a new food product is tasty and fits the description specified by the producer.
- They help to assess whether the new food product is better or worse than other similar products on the market.
- They help to assess whether the new product is liked by consumers.
- They help to predict whether the new product will succeed.

Manufacturers use various tasting methods, but they always need to apply a few rules to make sure that the result is reliable and unbiased.

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Slide 6

Learn

TASTE PANEL AND CONTROLLED CONDITIONS

What do you need to remember when setting up a taste panel?

- All tasters have to undergo **training** to know what is required to taste and assess the food samples and how to code their results.
- Tasters need to be **isolated** from each other - usually each of them should be seated in a room of their own.
- Lighting has to be **adjusted** so that a difference in colour doesn't affect the results (unless you are actually assessing the colour of the food).
- The room has to be at a **comfortable temperature** and be **soundproofed** so that the tasters are not distracted.
- Food samples should have the **same size and temperature**.
- Tasters need to be in **good health** - blocked noses is not an option.
- Food samples should be served on **sterilised plates/cups**, ideally washed in hot and then rinsed in cold water to remove any residue. Because of the risk of serving glass foods, and using the average score of a sample.
- If a food is served on a **carrier** such as water, make sure it is neutral in taste.
- Each taster should be provided with a **glass of water** to drink like in the middle of each sample to help the taster's palate and to cleanse with each other.
- Food samples have to be **freshly prepared** as some of the things, especially over time (e.g. in a room with no air, they will not stay fresh and lose their taste).

- Students should discuss when setting up a taste panel.
- Click to reveal the answers. Do you mention all of them? Do you miss any else?

Slide 7

Learn

SENSORY TESTING METHODS PREFERENCE TESTS

Preference tests include the paired preference test and the hedonic test.

Paired preference test

Used to determine which one of two food samples is preferred by the consumer.

Sample 1 OR Sample 2

Hedonic test

Used to check whether consumers "like" or "dislike" a food sample. It is a test for market research.

Sample 1, Sample 2, Sample 3, Sample 4

Unlikely to like Very likely to like

- You could use cups to serve the samples.

Slide 8

Learn

SENSORY TESTING METHODS DISCRIMINATION TEST

The discrimination test is used to find out differences between two samples. Often the differences are so small that only trained tasters can distinguish them!

Triangle test

Used to find the odd one out. In this test the taster receives three samples, two of which are identical. The taster has to point out the different one.

A C B

Which one is different? Odd one out

This test can be used to check whether changing the sugar or fat content in a food product makes a difference in taste, for example.

- You could use cups to serve the samples.

Slide 9

Learn

SENSORY TESTING METHODS GRADING TESTS

Grading tests include the ranking, rating and profiling tests. These tests are more precise and help to assess a food product in a more detailed way.

Ranking test

Used to measure how strong a food feature is, and ranks the food in an order, i.e. from the weakest to the best one.

Sample 1, Sample 2, Sample 3, Sample 4

Not sweet at all Very sweet

Rating test

Used to assign a score to many food samples (e.g. sweetness or many features of one food sample). The scores can then be related to the product and the consumer.

Sample 1, Sample 2, Sample 3, Sample 4, Sample 5

Acidity score: 100, 200, 300, 400, 500

- You could use cups to serve the samples.

Slide 10

Learn

SENSORY TESTING METHODS GRADING TESTS

Profiling test

Used to create a detailed visual description of many different features of a food sample. The results are then shown as a diagram and each line is connected to the other to form the shape of a product.

This way the manufacturer knows which aspects of the food are acceptable, liked and which need to be improved to increase the food's chances of success on the market.

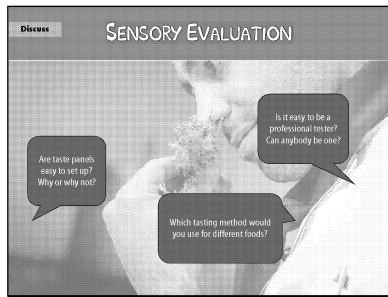
Sample 1

- You could use cups to serve the samples.

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Slide 11



- Take this opportunity to discuss what you have learnt and how it impacts on the industry

Slide 12

Slide 13

- Students should write their answers on a piece of paper and show them to the teacher
- Click to reveal the answer or mark or self-mark their answers

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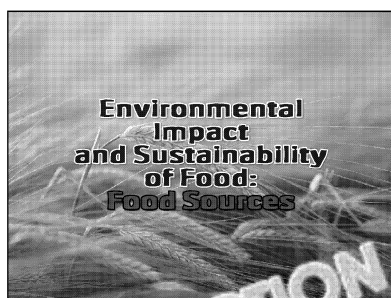
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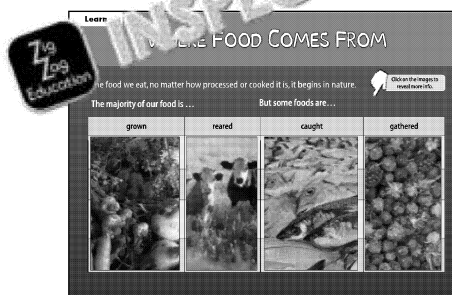
3.6.1 Environmental impact and sustainability

PowerPoint 27: Food Sources

Slide 1

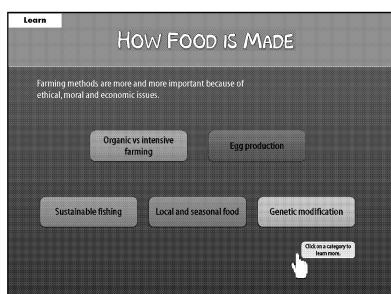


Slide 2

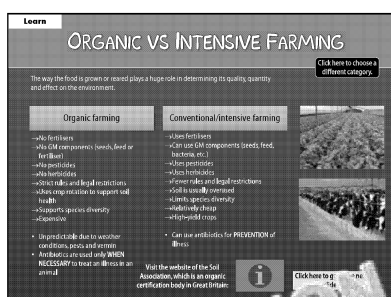


- Students to provide examples
- Click on a box to reveal

Slide 3



Slide 4



- Discuss the advantages of organic and conventional farming
- Click 'next slide' for egg production slide 3 to choose another category

Slide 5



- Discuss what each production system involves
- Discuss which is the best for the environment
- Click 'next slide' for meat production back to slide 3 to choose another category

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Slide 6

Learn

EGG PRODUCTION

Click here to choose a different category

The rearing conditions for egg-laying hens are stated by the RSPCA.

They care about animals' well-being (not only in egg farms) and ensure the traceability of food (so you can find out precisely where it comes from, how it was made, etc.)

Visit the RSPCA website to learn more

In Great Britain eggs are also labelled with a red British Lion stamp.

The British Lion scheme is a programme which ensures food safety by vaccinating hens against *Salmonella*.

Visit the website to learn more about the British Lion scheme

Click here to go to the next slide

- Discuss welfare of hen
- Click 'next slide' for su to slide 3 to choose an

Slide 7

Learn

SUSTAINABLE FARMING

Click here to choose a different category

Sustainable farming includes rearing and catching methods which are environmentally friendly.

- It uses only the necessary resources
- Limits the production of waste and recycles all possible resources
- Doesn't affect society's ability to maintain their own lifestyle
- Supports species diversity
- Limits the risk of extinction

Visit the website to learn more

Click here to go to the next slide

- Discuss the benefits of
- Optional: can visit web Click 'next slide' for loc back to slide 3 to choo

Slide 8

Learn

LOCAL AND SEASONAL FOOD

Click here to choose a different category

Local and seasonal foods are gaining more and more in popularity. Why is this?

- ☒ Buying locally produced food means that more money stays in the community. This supports the community and allows it to flourish better.
- ☒ Buying locally means that the food doesn't have to travel far. It's often fresher and less polluted. Fewer pesticides and carbon dioxide are produced.
- ☒ Buying seasonal foods usually means that they are fresher, tastier and more nutritious. This is because they are left on the plant as long as needed to ripen fully, and aren't picked too early, which could make them ripen too fast. They are also often cheaper in season.
- ☒ Buying locally means jobs for people in the local community, whether on the farm, or in a shop.
- ☐ Buying only local seasonal foods means that you're not buying food from other countries, which could have been produced using more resources than local food.

Click here to go to the next slide

- Discuss advantages and seasonal food.
- Click 'next slide' for mo food, or go back to slid category.

Slide 9

Learn

LOCAL AND SEASONAL FOOD

Click here to choose a different category

So what foods are considered seasonal in Great Britain?

| Month | Typical seasonal foods |
|-----------|---|
| March | Asparagus, peas, early potatoes, spring onions, early carrots, early cabbages |
| April | Spring onions, early potatoes, early carrots, early cabbages, early peas |
| May | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans |
| June | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes |
| July | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes |
| August | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes, early aubergines |
| September | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes, early aubergines, early pumpkins |
| October | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes, early aubergines, early pumpkins, early squash |
| November | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes, early aubergines, early pumpkins, early squash, early sweet potatoes |
| December | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes, early aubergines, early pumpkins, early squash, early sweet potatoes, early Brussels sprouts |
| January | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes, early aubergines, early pumpkins, early squash, early sweet potatoes, early Brussels sprouts, early cauliflower |
| February | Spring onions, early potatoes, early carrots, early cabbages, early peas, early beans, early tomatoes, early courgettes, early aubergines, early pumpkins, early squash, early sweet potatoes, early Brussels sprouts, early cauliflower, early leeks |

Click here to go to the next slide

- Assess students' aware Britain.
- Click 'next slide' for ge back to slide 3 to choo

Slide 10

Learn

GENETICALLY MODIFIED FOODS

Click here to choose a different category

All food products made of living organisms, such as plants, animals or fungi, are built of cells, each of which contains a unique DNA code encoded in its nucleus.

DNA is built of thousands of nucleotides bonded together. A certain sequence of nucleotides determines what kind of protein the cell will build, and therefore, determines the whole living organism.

Long sequences of nucleotides create GENES. The genes determine many features, such as the height of a plant, the amount of muscle tissue in an animal or the colour of flower petals.

Modern technology allows people to change the DNA of bacteria, plants and animals to obtain certain desired effects.

Click here to go to the next slide

- Introduce GM foods to understanding.
- Click 'next slide' for mo foods, or go back to slid category.

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Slide 11

Learn

GENETICALLY MODIFIED FOODS ADVANTAGES AND DISADVANTAGES

Click here to choose a different category.

Advantages

- Plants are resistant to weather conditions, pests and viruses, so fewer pesticides and herbicides are needed, and plants can be grown virtually anywhere.
- Plants grow faster, are bigger and make more produce (fruit, seeds, vegetables).
- Animals grow more muscle tissue and produce more milk, eggs or fat.
- Animals have higher immunity, so fewer antibiotics are needed.
- The food produced contains more nutrients, e.g. protein, fat or vitamins, so it makes it better for the food industry (more food is produced) and better for the consumers (prevents malnutrition).
- More food can be produced, so it helps to avoid food shortages and hunger, and helps to maintain food availability.
- Food can have longer shelf life, so can be safely stored for longer without losing its nutritional value.

Disadvantages

- Nobody knows what the long-term effects of GM foods are on health.
- GM food is linked to the epidemic of obesity.
- GM foods may be linked to higher prevalence of cancer and allergies.
- GM seeds supersede naturally occurring plant species and affect biodiversity.
- GM organisms lead to the extinction of many plant and animal species.
- Pests and viruses can mutate and become resistant to the substances in plants which are supposed to repel them, so future crops may be endangered.
- GM foods may lead to antibiotic resistance and the creation of new dangerous diseases.

Click here to go to the next slide.

- Discuss the advantages and disadvantages of GM foods.
- Can students think of any other advantages or disadvantages?
- Click 'next slide' to discuss the disadvantages to slide 3 to choose an advantage.

Slide 12

Discuss

FOOD SOURCES

What foods are produced near you?

Is it possible to have a balanced diet?

Can sustainable farming coexist with intensive farming?

Are most foods genetically modified? Why?

Zig Zag Education

- Take this opportunity to discuss the environment and how it impacts on food sources.

Slide 13

Activity

FOOD SOURCES

Watch the video below and answer the questions.

▶

- Is it possible to reconcile organic farming and GM food?
- How can climate change affect food sustainability?
- Was genetic modification invented in the twentieth century?
- What is getting?
- How can genetic modifications support food sustainability?

Slide 14

Practice Question

FOOD SOURCES

What are the advantages of genetically modified food products? (4 marks)

Click to reveal answer!

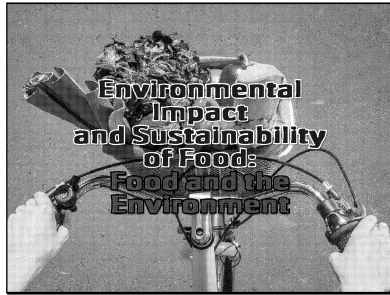
- Students should write their answers on a piece of paper and then click to reveal the answer.
- Click to reveal the answer or mark or self-mark their own answer.

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PowerPoint 28: Food and the Environment

Slide 1



Slide 2



Click on a category to allow you to teach

Slide 3

LOCAL AND SEASONAL FOODS

Learn

What people can grow in a given region depends on many factors, including:

- > soil quality
- > weather conditions
- > water availability
- > risk of floods or droughts
- > landforms

For these reasons, some plants can be grown in certain regions (e.g. rice in China), but wouldn't survive in others (e.g. it's too cold for rice to grow in Great Britain).

British agriculture is based on the production of:

- > cereals (wheat, barley, oats, etc.)
- > oilseed (rapeseed, linseed)
- > potatoes, sugar beet
- > peas and beans
- > maize
- > various vegetables and fruit
- > dairy and beef cattle, sheep and lambs, pigs
- > table food items, etc. for meat and laying poultry (chickens, etc.)

Think of what foods are grown and raised in Great Britain.

Click here to choose another topic

Click here to go to the next slide

Slide 4

LOCAL AND SEASONAL FOODS

Learn

Why do people decide to buy local, seasonal foods?

- Better taste and appearance**
- Fresh and healthy**
- Protects species diversity**
- Cheaper**
- Supports food availability**

Click here to choose another topic

Click here to go to the next slide

- Ask students for experience whether they would consume local products.

Slide 5

LOCAL AND SEASONAL FOODS

Learn

What seasonal foods are produced in Great Britain?

September–November

March–May

June–August

Click here to choose another topic

Click here to go to the next slide

Recap local and seasonal

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Slide 6

Learn

TRANSPORT

Transport is an important part of the food industry.

- The early, animal-based, food and drink industries are almost entirely local. Worked well as markets expanded.
- With the advent of the motor vehicle, food and drink industries expanded their reach. Food and drink products are now able to travel further.
- Food and drink products are now able to travel further.
- Food and drink products are now able to travel further.

Click here to choose another topic.

Click here to go to the next slide.

- Consider the transport (bananas) from Latin America.

Slide 7

Learn

TRANSPORT

Transportation affects the environment in various ways:

- As each stage commences food trucks and large amounts of energy are used.
- All means of transport - lorries, bicycles, ships, planes - produce exhaust fumes full of heavy metals and greenhouse gases.
- Greenhouse gases and heavy metals pollute the environment, especially around busy roads.
- Greenhouse gases produced when burning fuel contribute to global warming.

How does this affect the climate?

Click here to reveal the answers to the questions.

Click here to go to the next slide.

- Discuss ways in which transport affects the environment.
- Get students to answer questions and reveal answers to check.

Slide 8

Learn

SUSTAINABLE FISHING

Sustainable fishing is developed as a remedy for environmental damage caused by intensive exploitation of natural resources. An example is sustainable fishing.

How does fishing affect the environment?

| Traditional methods | Sustainable fishing |
|---------------------|---------------------|
| | |

Click to reveal the answers!

Click here to go to the next slide.

- Discuss questions before and after.

Slide 9

Learn

SUSTAINABLE FISHING

Sustainable fishing is believed to be a way of maintaining food availability for the future.

Fish farms also provide work for many people around the world.

Fish farms support development of local areas.

Fish farms support and empower local farmers, workers and whole communities.

Fish and seafood produced in a sustainable way are certified by the Marine Stewardship Council.

Visit the MSC website to learn more.

Click here to choose another topic.

Click here to go to the next slide.

Slide 10

Learn

ORGANIC FOODS

Organic foods are plant- and animal-derived food products which are grown or reared in a specific way.

- No chemicals can be used during the production process. This means no pesticides, herbicides or insecticides. As no artificial protection is used, farmers may choose to use natural methods, such as planting certain plants together to repel insects.
- No artificial fertilisers can be used. Natural fertilisers, such as manure, are OK. Antibiotics can only be used in case of an ill or injured animal. They CANNOT be used on healthy animals or in whole herds.
- The use of antibiotics is restricted.
- No GM elements can be used. This means no genetically modified (GM) food or on which genes are grown. Genetically modified (GM) food or on which genes are grown. Genetically modified (GM) food or on which genes are grown.

Organic food is usually taken around three years, which makes it difficult and costly for the farmers.

Click here to choose another topic.

Click here to go to the next slide.

- Recap organic foods.

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Slide 11

Learn

ORGANIC FOODS

What organic products are produced in Great Britain?

- > In 2015, 521,000 hectares were farmed organically
- > Most of these areas were used as pasture for livestock
- > The rest of the land was used to grow cereals, vegetables, potatoes, herbs, fruit and nuts.
- > Farms were also rearing organic poultry (also for eggs), sheep, and a few cattle (also for milk) and pigs.
- > A very small area was used for woodland.

Organic food has to be certified by the Soil Association. The rules are very strict, and to become fully organic farmers have to invest a lot of money and time.

Click here to choose another topic.

Visit the Soil Association website to learn more.

Click here to go to the next slide.

Slide 12

Learn

FOOD WASTE

Food waste is a growing problem!

Why food is wasted?

Click to reveal answers!

Why food waste is bad?

Click here to choose another topic.

Click here to go to the next slide.

Slide 13

Learn

FOOD WASTE

But how can we prevent food waste?

Production (click to reveal)

Manufacturing and retail (click to reveal)

Home (click to reveal)

Click here to choose another topic.

Click here to go to the next slide.

Slide 14

Learn

PACKAGING

These days, most foods come in packaging and the effect this is having on the planet is often discussed in the news.

Why do we use packaging?

- To protect the contents from damage, such as oxygen, light or insects
- To portion the food, so it's easier for the consumer to eat. How much they need
- To inform consumers about the product, its nutritional value, expiration date, etc.
- To make the product more appealing – packages are often very colourful and eye-catching
- To make the food safer and more convenient to carry home
- To increase the shelf life, e.g. through the use of modified atmosphere packaging and by slowing down the growth of microorganisms

What is the packaging made of and how long does it take to decompose?

| | |
|---------|----------------------|
| Paper | 2-6 weeks |
| Glass | Millions of years |
| Metal | 80-200 years |
| Foil | 10-10,000 years |
| Plastic | 450 years |
| Wood | 3 months – 300 years |

Click here to choose another topic.

Click here to go to the next slide.

Slide 15

Learn

PACKAGING

How does this affect the environment?

- It takes very long time for some materials to decompose.
- Some of them don't decompose at all (e.g. Styrofoam).
- As a natural resource is used to produce the packaging.
- Rubbish that is not disposed of correctly pollutes the environment.
- Animals, birds and fish can eat the rubbish and die as a result.

To prevent these negative effects, we need to RECYCLE as much packaging as possible.

- Food waste can be left to decompose naturally and produce valuable肥料 for gardens, greenhouses.
- Glass and plastic can be melted and converted into new packaging.
- Wooden crates can be reused.
- Paper can be recycled.
- Clay can be recycled.

How to recycle?

Food waste and other organic waste, such as fruit and vegetables, should be put in the brown bin.

All packaging (plastic, such as bottles, containers, films, etc.) should be put in the recycling bin.

Click here to choose another topic.

Click here to go to the next slide.

- Discuss questions before

- Ask students for ideas on how to reduce food waste in the three stages
- Click on each box to reveal answers

- Discuss why we use packaging and ask students can guess how long it takes for the material to decompose

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Slide 16

CARBON FOOTPRINT

Learn

The carbon footprint is... the amount of greenhouse gases emitted during the production, processing and transportation of a product, e.g. a food item.

It is bad because... greenhouse gases accumulate around Earth and trap the warmth around it, increasing the temperature and contributing to global warming.

It can be reduced by...

- ✓ shopping locally
- ✓ reducing food miles
- ✓ using fresh ingredients instead of highly processed foods
- ✓ lowering meat consumption as the meat industry uses a lot of fossil fuels and produces a lot of methane (especially beef)
- ✓ lowering the amount of imported foods
- ✓ using renewable sources of energy, such as wind or sun

Click here to choose another topic.

Click here to go to the next slide.

Slide 17

FOOD AND THE ENVIRONMENT

Discuss

Is it possible to stop using food packaging?

When are more greenhouse gases produced – when growing plants or when rearing livestock?

Would it be possible to eat only local foods?

Is organic food healthier than non-organic food?

What is your carbon footprint?

- Take this opportunity to learn about food and how it impacts the environment.

Slide 18

FOOD AND THE ENVIRONMENT

Activity

Visit the website and calculate your own personal carbon footprint:

i

Compare your results with your friends.

- Is your carbon footprint lower or higher than theirs?
- Is there anything you can do to lower your carbon footprint?

- This could be done in class.

Slide 19

FOOD AND THE ENVIRONMENT

Practice Question

What are the disadvantages of using food packaging? (4 marks)

Click to reveal answer!

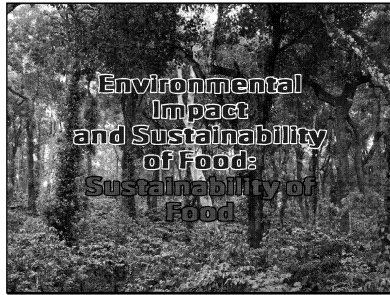
- Students should write their answers on a piece of paper and show them to the teacher.
- Click to reveal the answer or mark or self-mark their answers.

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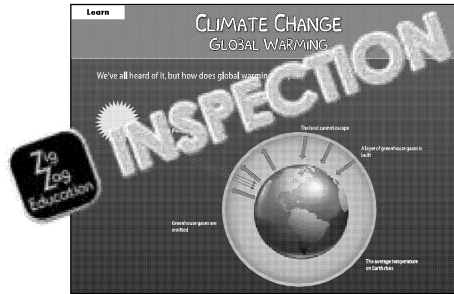


PowerPoint 29: Sustainability of Food

Slide 1

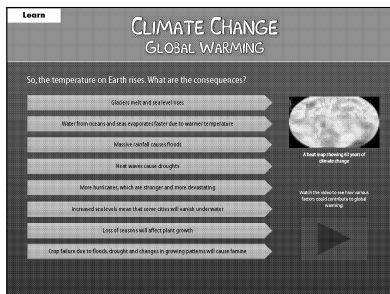


Slide 2



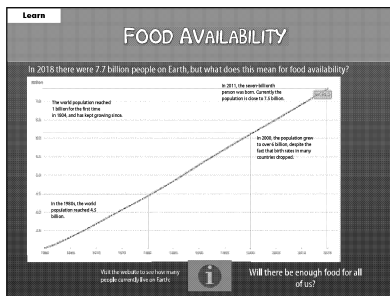
- Discussion with the students about what global warming is and how it works
- Explanation of global warming and its effects

Slide 3



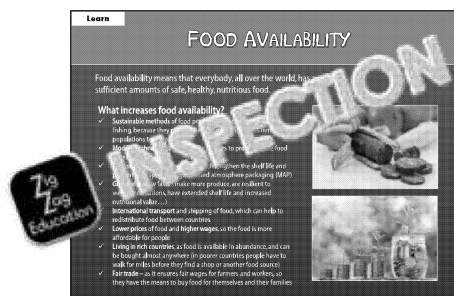
- Ask students what the consequences of global warming may be
- Discuss the consequences of global warming

Slide 4



- Discuss the impact of population growth on food availability

Slide 5



- Define food availability
- Using students' previous understanding of the world, discuss what food availability means

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Slide 6

Learn

FOOD AVAILABILITY

However, some things we do here on Earth reduce food availability.

What lowers food availability?

- Global warming + climate change
- Drought - plants can't be planted, and animals will die without water and feed
- Floods - cause crops to be lost and the usable land area
- Pests and viruses - causing failure
- Poverty - no money to buy food
- Insufficient land for growing food - food can't be grown on roads, for example, and increasing sea levels lower the available area
- Soil depletion - poor quality soil is less nutritious, so can't be used for growing crops (may be good for pasture)
- Food waste - good food is thrown away for no real reason
- Unfriendly weather conditions - make growing plants impossible and cause crop failure
- Growing pesticides which needs more and more food
- Overconsumption - people in rich countries eat too much, while people in poor countries suffer from hunger
- Seasonality - many food products are available only from March to October and for the rest of the year people eat what they have managed to store and preserve



- Discussion of the factors that lower food availability.
- Discussion of which factors are most significant and how.

Slide 7

Learn

FAIRTRADE

What is Fairtrade?

What does Fairtrade do?

The world's first Fairtrade product...

Click on a box to reveal the answer.

Visit the Fairtrade website: Fairtrade.org.uk



- Assess students' understanding of Fairtrade by seeing whether they can identify the correct answer before revealing the answer.

Slide 8

Learn

SUSTAINABILITY OF FOOD SOURCES

What is meant by sustainability of food?

- Enough food is made for everyone
- Food production doesn't harm the environment
- Food production doesn't exploit resources excessively
- Food production supports the ecosystem

Watch the video to learn more about food sustainability.

Is it possible to achieve food sustainability?

- Yes, by using resources responsibly
- Yes, by not exploiting resources beyond what we need
- Yes, by using sustainable farming methods, e.g. fish farms
- Yes, by protecting the diversity of plant and animal species

Can you name any organisations or schemes which are associated with sustainable products?






- Discuss what is meant by sustainability of food and whether it is achievable.
- Assess students' understanding of sustainability by asking them to work to support the sustainability of food.
- Watch the short video on the sustainability of food.

Slide 9

Discuss

SUSTAINABILITY OF FOOD

Is it possible to achieve food sustainability?

Is it really the case that there is insufficient land for growing food?

Is it possible to avoid hunger in the world?

Can we stop global warming?

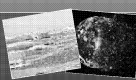

- Take this opportunity to discuss the issues learnt and how it impacts on food sustainability.

Slide 10

Activity

SUSTAINABILITY OF FOOD

Order the stages of global warming.

Click anywhere to reveal the answer!

- Students should order the stages of global warming.
- Click anywhere to reveal the answer.

Slide 11

Practice Question

SUSTAINABILITY OF FOOD

Explain the positive and negative factors that can affect the availability of food. (4 marks)

Click to reveal answer!

- Students should write their answer on a piece of paper and then click to reveal the answer to mark or self-mark their answer.

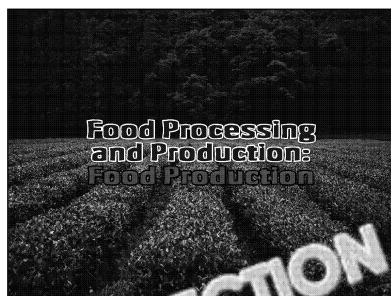
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3.6.2 Food processing and production

PowerPoint 30: Food Production

Slide 1

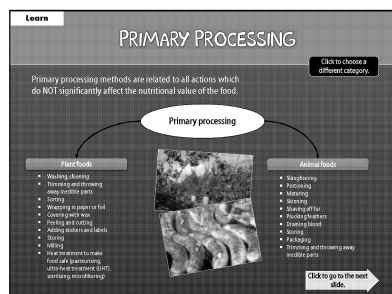


Slide 2

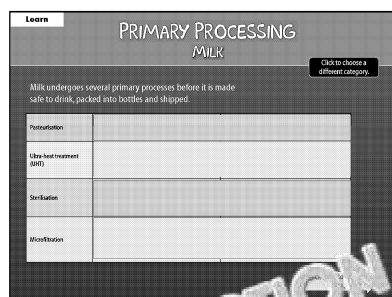


- Introduce primary and then click the box/circle on each.

Slide 3

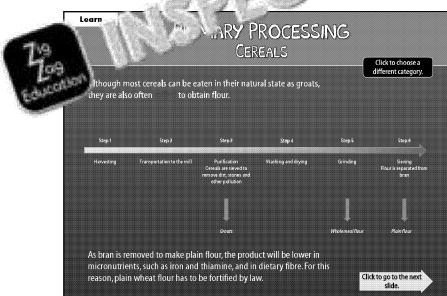


Slide 4



- Discuss the steps in milk processing and how they affect the nutritional value.

Slide 5



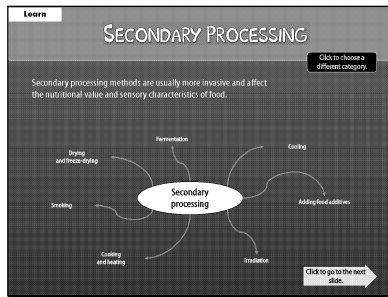
- Go through the steps in cereal processing.

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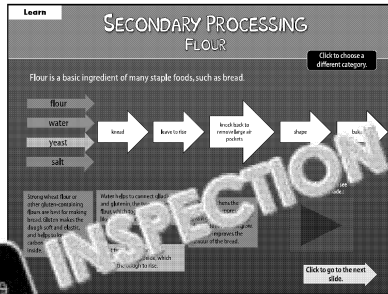


Slide 6



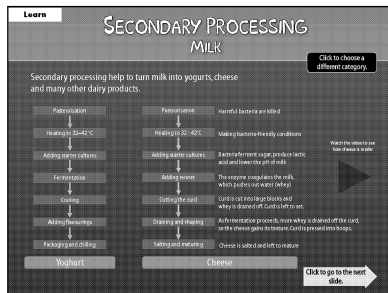
- Outline and discuss different methods.

Slide 7



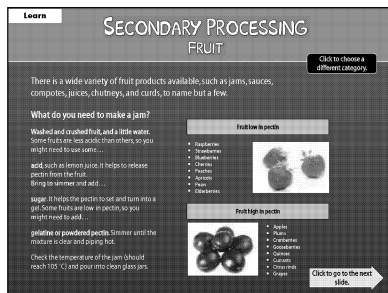
- Discuss how flour (primary product) is processed through secondary processing.

Slide 8

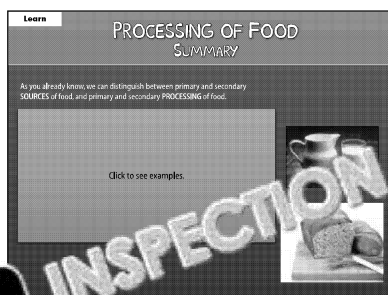


- Discuss how milk (primary product) is turned into other products through secondary processing.

Slide 9



Slide 10



- See whether students can identify the source of each.

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Slide 11


Learn

NUTRITIONAL VALUE OF PROCESSED FOOD

The processing of food may lead to loss in its nutritional value due to:

- removal of parts, such as skin or bran
- Damage to cell structure which speeds up enzymic browning and oxidation
- Heat treatment, which denatures proteins, leads to changes in chemical structure and creates new chemical compounds
- external factors, as many vitamins are unstable and will break down at high temperatures, in the presence of oxygen, at high pressure, in light or at low pH
- draining, as water-soluble vitamins dissolve in water, so some of them will be drained off with it
- skimming, as fat-soluble vitamins will be removed from the food with the fat

Think of food products which may be affected by each of these processes



- Discussion of the ways of food can be reduced
- Discussion of ways in which the nutritional value of food

Slide 12

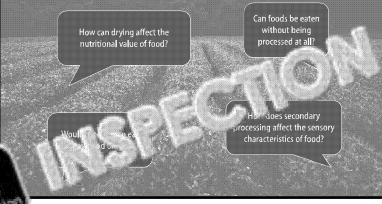
Discuss

FOOD PRODUCTION

How can drying affect the nutritional value of food?

Can foods be eaten without being processed at all?

How does secondary processing affect the sensory characteristics of food?



- Take this opportunity to learn about food production and how it impacts

Slide 13

Activity

FOOD PRODUCTION

Match each stage of cheese production with the explanation.

| | |
|-------------------------|--|
| Pasteurisation | Curd is cut into large blocks and whey is drained off. Curd is salted |
| Heating to 32–42 °C | Harmful bacteria are killed |
| Adding starter cultures | Cheese is salted and left to mature |
| Adding rennet | As fermentation proceeds, more whey is drained off the curd, so the cheese gets firmer. Curd is pressed into blocks. |
| Cutting the curd | The enzyme coagulates the milk, which pushes out water (whey) |
| Draining and shaping | Making bacteria friendly conditions |
| Salt and maturing | Bacteria ferment sugar produce lactic acid and lower the pH of milk |

Click on each stage to reveal the explanation

Slide 14

Practice Question

FOOD PRODUCTION

Which one of the following processes is most likely to change the sensory characteristics of milk? (1 mark)

| | |
|-------------------------|-------------------------------------|
| a. Ultra-heat treatment | <input type="checkbox"/> |
| b. Pasteurisation | <input type="checkbox"/> |
| c. Microfiltration | <input type="checkbox"/> |
| d. Sterilisation | <input checked="" type="checkbox"/> |

Due to the high temperature and the length of the process, sterilisation leads to changes in the colour, taste and aroma of milk, as proteins react with sugars in the Maillard reaction.

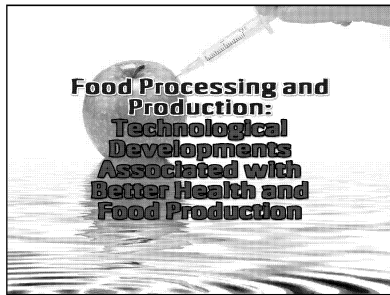
- Students should write their answer on a piece of paper and show it to the teacher
- Click to reveal the answer and mark or self-mark their work

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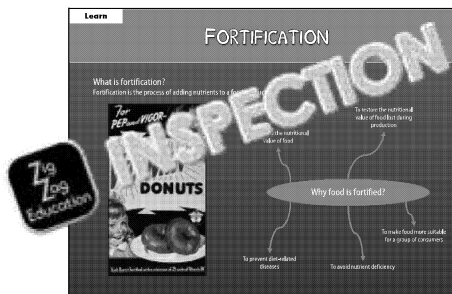


PowerPoint 31: Technological Developments Associated with Better

Slide 1



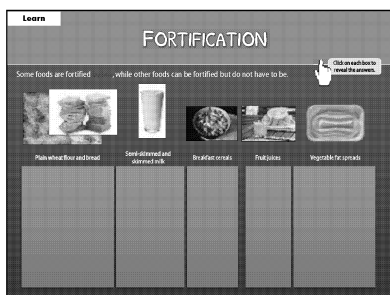
Slide 2



Discussion of what is r
foods would be fortifie

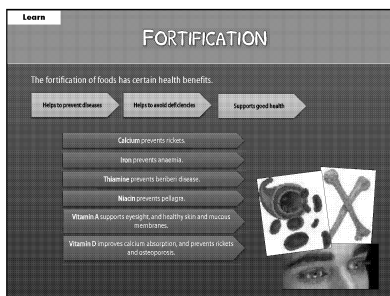
- Discussion of whether
foods.

Slide 3



- Discuss whether the p
law or whether fortifica
- Discuss what each pro
and why.

Slide 4



Slide 5



Assess students' unde
answers.

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Slide 6

Learn

FOOD ADDITIVES

Food additives are natural or artificial substances added to food products in small amounts. A food additive is not usually consumed on its own, so, for example, sugar is NOT a food additive, but an ingredient.

Food additives are tested for safety and if they pass the test they are given an E number.

Currently, food additives have to be approved by European Union law.

E

Visit the website to see the list of approved food additives.

Slide 7

Learn

FOOD ADDITIVES

Click on a button to reveal the answer.

Colourings (E100)

Emulsifiers and stabilisers (E400)

Sweeteners (E900) and Flavourings (E600)

Preservatives (E200)

Examples

Advantages

Zig Zag Education

- Assess students' prior answers.

Slide 8

Learn

GENETICALLY MODIFIED FOODS AND HEALTH

Modern technologies allow people to modify the DNA of living organisms to obtain certain desired effects.

In fact, genetically modified food products can not only contribute to increasing food availability but can also bring certain health benefits.

✓ Provide more nutrients than standard foods.

For example:

- Golden rice is enriched with vitamin A.
- Potato enriched rice.
- Orange 3 is enriched with beta-carotene.

✓ Can be used as a method of pest-resistant and curing malnutrition and deficiencies.

✓ Can be higher in antioxidants such as lycopene, which prevents cancer.

✓ As they can be produced in larger amounts, they can help to alleviate (or even eliminate) hunger/famine in the world.

Read the article to discover some examples of GM food products.

✗ No long-term data to prove they are safe for health.

✗ Can be linked to growing obesity rates.

✗ Can cause allergies.

✗ Can cause antibiotic resistance.

✗ Can be linked to increased incidence of cancer.

✗ New dangerous diseases can be created by introducing bacterial genes to plant or animal DNA.

Slide 9

Discuss

TECHNOLOGICAL DEVELOPMENTS ASSOCIATED WITH BETTER HEALTH AND FOOD PRODUCTION

Why may people choose to avoid food additives?

Is margarine better than butter?

Is fortification of food still necessary?

Are breakfast cereals really healthy for children?

- Take this opportunity to learn what you have learnt and how it impacts on your life.

Slide 10

Activity

TECHNOLOGICAL DEVELOPMENTS ASSOCIATED WITH BETTER HEALTH AND FOOD PRODUCTION

Click on your chosen answer.

If the answer is correct, the box will turn green.

If the answer is incorrect, the box will turn red – try again!

Good luck!

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Slide 11

| | |
|--|------------|
| thiamin | folic acid |
| Which of the following is NOT added to flour by law? | |
| iron | niacin |

Click here to go to the next question.

Slide 12

| | |
|--------------------------|------------|
| sweetener | emulsifier |
| Aspartame is a common... | |
| starch | colourant |

Click here to go to the next question.

Slide 13

| | |
|--|------------------|
| vitamins A and E | vitamins A and F |
| Fat spreads are obligatorily fortified with... | |
| vitamins A and D | vitamins D and E |

Click here to go to the next question.

Slide 14

| | |
|---|--------------|
| phytolincol | phytosterol |
| The cholesterol-lowering substance in fat spreads is called.... | |
| phytosolol | phytohormone |

Click here to go to the next question.

Slide 15

| | |
|--|---------|
| thiamin | calcium |
| Which of the following substances is added to flour to prevent beriberi? | |
| iron | niacin |

Click here to go to the next question.

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Slide 16

| | |
|--|--------|
| poisoning | ADHD |
| Sulfur dioxide is a common preservative which can cause... | |
| allergic reactions | autism |

Click here to go to the next question.

Slide 17

| | |
|--|------------------|
| vitamin D | vitamin A |
| By law, skimmed milk has to be fortified with... | |
| vitamin C | vitamins A and D |

Click here to go to the next question.

Slide 18

| | |
|---|-------------------|
| bread | semi-skimmed milk |
| Which of the following food products is NOT fortified by law? | |
| margarine | butter |

Click here to go to the next question.

Slide 19

| | |
|---|------------|
| arthritis | anaemia |
| High cholesterol levels may cause a disease called... | |
| atherosclerosis | arrhythmia |

Click here to go to the next question.

Slide 20

| | |
|--|---------------|
| egg yolk | vegetable oil |
| Lecithin is a natural emulsifier present in... | |
| butter | ... |

Click here to go to the next question.

Slide 21

TECHNOLOGICAL DEVELOPMENTS ASSOCIATED WITH BETTER HEALTH AND FOOD PRODUCTION

Practice Question

What are the advantages of using additives in food? (4 marks)

Click to reveal answer!

- Students should write...
- Click to reveal the answer...

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