

Land, water and bees – don't take us for granted: A healthy diet

Teacher notes

Introduction

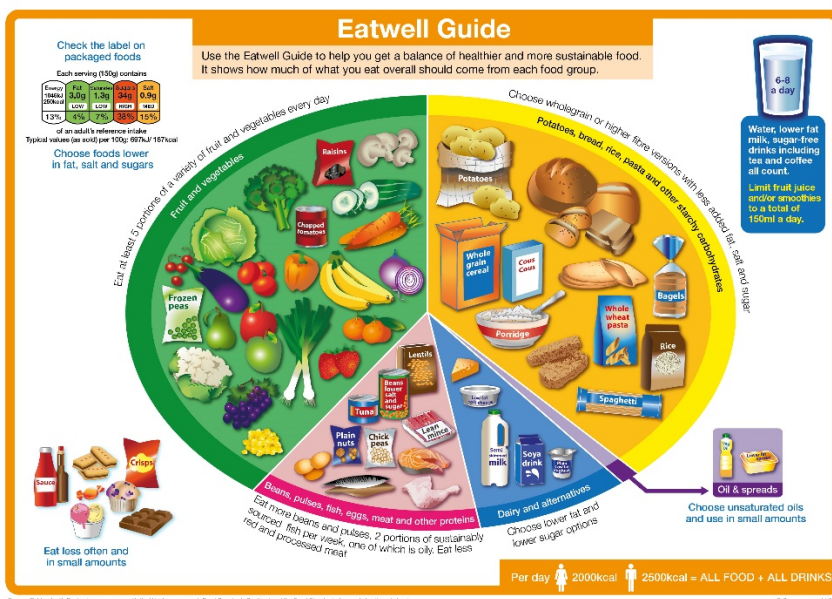
These activities ask students to demonstrate their existing knowledge of healthy eating and their understanding of the scientific terms used, before reinforcing and extending that knowledge. The presentation 'A healthy diet' provided on The Crunch website (thecrunch.wellcome.ac.uk) can be used if students need a reminder.

Activities

Why is a healthy diet important?

The presentation 'A healthy diet' covers the five food groups and some consequences of poor diet. If you use the slides about disease, students may ask questions about family members or the causes and progress of the diseases mentioned (type 2 diabetes, heart disease, cancers, respiratory illnesses and tooth decay). You may wish to be prepared with simple explanations about each disease, and you should stress to students that statistics do not give yes/no answers about individual cases (for example, consumption of red and processed meats is associated with risk of bowel cancer, but that does not mean that someone who gets bowel cancer can be blamed for their diet, or that vegetarians never get bowel cancer). Sensitivity to the possibility that students may have family members with these diseases is, of course, called for.

The presentation mentions the Eatwell Guide. The full version can be downloaded from www.gov.uk/government/publications/the-eatwell-guide. You may want to print it for distribution to students, as the detail may not be legible when projected onto a whiteboard.



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Ten in ten

Give students sheets of paper or whiteboards and ask them to show what they already know about healthy eating by writing 10 key words or bullet points in 10 minutes, using large lettering.

The sheets are then displayed, and you can summarise the ideas and ask the class to comment. Look at the facts presented, scientific terminology, any slogans such as 'Five a day', and correct any misconceptions, for example use of the term 'dairy' for a food group.

Ask the class to agree on a class definition of 'a healthy diet'.

To differentiate this task for less able pupils, it may be more appropriate to ask for 'five in five', or to supply a list of relevant words as reminders and to encourage use of scientific terms. You could prompt with questions such as 'Which food groups are needed in your diet?', 'Which food group is high energy?'.

What's on the menu?

This task on the Student activity sheet reinforces how we define a balanced diet. Students consider meal combinations and discuss what is 'wrong' with them in healthy eating terms before suggesting improvements. Answers are provided at the end of these Teacher notes.

What did you eat yesterday?

In this activity students list all the food they ate the previous day. To differentiate this task for more able pupils you could set the design of a record sheet as a homework exercise in preparation for the lesson, but a common sheet has obvious advantages if you wish to collate results (perhaps anonymously). The class should therefore discuss and agree on a final design. This can then be created by editing the MS Word file of the Student activity sheet.

When students have completed the sheet, ask them to look critically at what they ate and to select one item in the diet that they could improve. They could use a highlighter to underline this item on their record sheet. Then ask the students to think about what they know about healthy eating, even if they do not always follow this advice, and replace the item with an 'even better if' item.

Students often fail to realise that the amount and type of liquid consumed is important, and this could be pointed out by the teacher. Students could research the current recommended daily allowance of water or the number of 'empty calories' in soft drinks.

Tasting healthy options

The Spring 2016 issue of the *Big Picture* (provided in The Crunch kit and available at bigpictureeducation.com) gives students an enormous amount of information about fat. The *Big Picture* video experiment investigates the issue of preference for dietary fat by giving people vegetable curries with different fat contents and asking them to express a preference. There is a wide range of products available in supermarkets that are specially produced to reduce levels of fat, sugar, salt and other ingredients, and these can be used in an investigation along the lines of the one in the *Big Picture* video.

Students can be given samples of foods which are produced in two versions, one 'original' and one reduced, or you could suggest they find their own. Some such foods are digestive biscuits (lower fat version), baked beans or tomato ketchup (low-salt and low-sugar version), and diet and ordinary cola drinks.

Safety

You should never eat or drink in a laboratory, so use a classroom or the school dining room for this investigation.

Check for food allergies beforehand. The labels on the foods should give details of possible allergens (for example biscuits produced in factories that also handle nuts).

This activity provides an opportunity to review ‘working scientifically’ concepts, including the importance of fair tests and blinding study subjects. Ask students whether they think their opinion will be affected if they know what they are tasting. (If they say no, remind them that commercial food – and wine – producers always use blind tasting panels because they have found that people’s expectations have a very strong influence on what they report.) Challenge the class to come up with an experimental design in which the testers do not know which version they are tasting. This might involve some students preparing plates labelled A and B (but otherwise identical in appearance) for one type of food, depositing the key to the identities with you, and then swapping with another group and tasting the foods prepared by that group. This ensures that nobody who knows the identity of the foods is present when the tasters try them.

Students can record their findings in a table like the one in the Student activity sheet. They should then be able to combine and discuss the class results to see if they can draw any conclusions.

The use of low-sugar versions of foods provides an opportunity to emphasise the government’s health warning about sugar consumption. Some students may have heard of the ‘sugar tax’ on soft drinks proposed in the 2016 budget and due to be brought in in two years’ time.

Answers to questions

What’s on the menu?

1. Breakfast 2, the scrambled egg meal, is lower in fat and sugar than the others. It has more carbohydrate and you would be less likely to get hungry later on in the morning, as the carbohydrate takes longer to digest. There is protein in the eggs and the yoghurt, which is good for growth and repair.

The sugar in the cereal and pastry would give a ‘sugar high’ quite quickly but you might feel hungry again soon after this meal.

The full cooked breakfast is very high in fat, and should only be eaten as an occasional treat. The orange juice contains vitamins, but also a lot of sugar, as do the baked beans.

2. The egg contains protein and the brown bread is a good source of fibre. Remove or reduce the high-fat crisps and chocolate. Replace them with a piece of fruit and add some salad to the sandwich to increase the amount of fruit and vegetables in the meal.
3. Fat – associated with heart disease, obesity, type 2 diabetes and some cancers.

Vitamins, minerals

4. The baked potato with a vegetable chilli is a healthy choice containing protein, carbohydrate and fibre. The salad adds more fibre, vitamins and minerals to the meal. The pie is high in sugar and fat. It could be replaced with an apple or an orange to add fibre and vitamin C. A glass of semi-skimmed milk would be a better option than the milkshake, as milk is lower in fat and sugar. If there is dressing added to the salad or butter on the potato, the fat in both of these would increase the calorie count and might contribute to weight gain.

5. Add some meat such as cooked chicken, which is a good protein source but low in fat, or low-fat cheese.

Replace the soft drink with water or fruit juice (although this is high in sugar too) and replace the cream with low-fat yoghurt to reduce the fat content and to provide some protein.

6. This meal is high in saturated fat.

Fruit could be added to provide more vitamins and minerals.

7. Roast chicken – protein; gravy – fat (if made with chicken juices); peas and carrots – fibre, vitamins; potatoes – carbohydrate, fibre, vitamins; fruit salad – vitamins, carbohydrates (simple sugars in the fruit); yoghurt – protein, mineral (calcium); a glass of water contributes to daily fluid requirement. The meal is balanced because it contains nutrients from most of the food groups required for health.



Further reading

British Nutrition Foundation: www.foodfactoflife.org.uk/

Eatwell Guide and NHS healthy eating pages: www.nhs.uk/Livewell/goodfood/Pages/the-eatwell-guide.aspx

Big Picture video experiment: Do we favour fatty foods?: www.bigpictureeducation.com/fat-experiment