

Safety issues	
Potential sensitivity relating to their own diets	
KS3 Science Programme of Study (DfE National Curriculum PoS)	KS4 GCSE Science Programme of Study (DfE National Curriculum PoS)
<p>Scientific attitudes</p> <ul style="list-style-type: none"> pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review evaluate risks <p>Experimental skills and investigations</p> <ul style="list-style-type: none"> ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience make predictions using scientific knowledge and understanding select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent and control variables, where appropriate make and record observations and measurements using a range of different methods for different investigations; and evaluate the reliability of methods and suggest possible improvements apply sampling techniques <p>Analysis and evaluation</p> <ul style="list-style-type: none"> present observations and data using appropriate methods, including tables and graphs interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions 	<p>Development of Scientific thinking</p> <ul style="list-style-type: none"> the ways in which methods and theories develop over time evaluate methods and suggest possible improvements and further investigations <p>Experimental skills and strategies</p> <ul style="list-style-type: none"> use scientific theories and explanations to develop hypotheses plan experiments to make observations, test hypotheses or explore phenomena applying knowledge of a range of techniques, apparatus, and materials to select those appropriate for fieldwork and for experiments making and recording observations and measurements evaluating methods and suggesting possible improvements and further investigations <p>Analysis and evaluation</p> <ul style="list-style-type: none"> translating data from one form to another interpret observations and data, including identifying patterns and trends, make inferences and draw conclusions
	<p>KS4 GCSE Biology subject content (DfE National Curriculum PoS)</p> <p>Health, disease and the development of medicines</p> <ul style="list-style-type: none"> the impact of lifestyle factors on the incidence of non-communicable diseases
KS3 Biology subject content (DfE National Curriculum PoS)	KS4 GCSE Food preparation and nutrition (DfE National Curriculum PoS)
<p>Nutrition and digestion</p> <ul style="list-style-type: none"> content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, dietary fibre and water; and why each is needed calculations of energy requirements in a healthy daily diet the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases 	<p>Nutrition</p> <ul style="list-style-type: none"> recommended guidelines for a healthy diet the recommended energy provided by protein, fat and carbohydrates (starch, sugars, fibre) and the percentage of daily energy intake the nutrients should contribute how to calculate energy and nutritional values and plan recipes, meals and diets accordingly <p>Food choice</p> <ul style="list-style-type: none"> how to make informed choices about food and drink to achieve a varied and balanced diet

Lesson 2: Health and Scientific Data

Curriculum Links



PSHE (DfE National Curriculum PoS)

Healthy eating

- what constitutes a healthy diet (including understanding calories and other nutritional content).
- the characteristics of a poor diet and risks associated with unhealthy eating (including, for example, obesity and tooth decay) and other behaviours (e.g. the impact of alcohol on diet or health).
- how to maintain healthy eating and the links between a poor diet and health risks, including tooth decay and cancer.

Behaviour Change Theory links

- BCT 1.1 Goal setting (behaviour)
- BCT 1.2 Problem solving
- BCT 1.8 Behavioural contract
- BCT 1.9 Commitment
- BCT 2.3 Self-monitoring of behaviour
- BCT 6.2 Social comparison

Objectives

At the end of this lesson students should be able to:

- Compare methods scientists use to study health in our communities
- Describe the types of evidence different data sources can give us
- Evaluate their own diet

Hook

How can we collect health data?


Students think of as many different methods/sources which could be used to collect health data that they can come up with, e.g. Food diaries, questionnaires, body measurements, fitness/activity trackers, apps, monitors, fridge/food cupboard photos

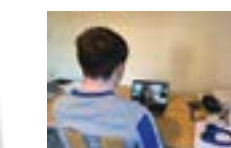
Activities:

Introduce the lesson and share the objectives with the students. Individuals record how confident they are for each of the objectives at the start of the lesson.

Lesson 2
Looking at Scientific Research Studies


The TeC-19 study carried out research into understanding the experiences of and the impact the COVID-19 restrictions had on teenagers and how they could be better supported during the pandemic.







The Southampton Women's Survey is a study learning about how diet and lifestyle factors influence the health and wellbeing of women and their children.



Activity 1: Comparing scientific research studies

Working in small groups, use the sources of information to answer the questions in the table opposite for your case study, either the Southampton Women's Survey or TeC-19. Share your information within your group so you can complete the questions for both studies.

Starter

Looking at scientific research studies

Time: 15 minutes

Students look at two case studies modelling how scientists carry out scientific and social research, **'What are the aims of the research? Who does it involve? How do they collect the data? What types of data do they collect?'**

Introduce the two studies; the Southampton Women's Survey (SWS) and the TeC-19 study.

Split the students into groups, each group uses the resources provided to look at one research study in detail and complete the summary sheet. A SWS Newsletter and TeC-19 resources are provided in the teacher's resource pack.

Note the website for the SWS study, for those students who want to find out more information, is in the newsletter.

Main

Activity 1: Comparing scientific research studies

Time: 10 minutes

Students share their findings to compare the two different studies and describe the differences between the different methods and types of information that was collected to measure health **'What are the different methods used to collect information to measure health? How does the different information help draw conclusions about health?'**

A key point to draw out is how research scientists work, looking at data and using it as evidence, recognising patterns and formulating new research questions. Even with SWS - researchers are going back to the data to ask new questions to those which they planned out at the start, and involves collecting different data.

What types of information do the different sources give us?

Research scientists use different methods to collect data from different sources. Discuss and highlight the main differences **'What is the difference between information collected in numbers (quantitative data) and the information collected in words (qualitative data)?'** Students describe and give some examples for each e.g. number = height and weight, text = focus group discussion.

How can we eat well to support our health and immune system?



Activity 2: "My Eatwell Guide"



As part of both studies the scientists asked participants to keep food diaries. Using your food diary or meal photos, input your data into the Excel spreadsheet.

A. Fill in the Excel spreadsheet

- Open the spreadsheet called "My Eatwell Guide" and save it under your name
- Open the spreadsheet tab at the bottom of the page "What's in my diet". Use your food diary to enter the information into the green boxes
- Count each time you have written an item of food as '1' portion, except for milk where 1 portion = a glass of milk or 1 serving of a bowl of cereal
- As you enter your information, the spreadsheet will calculate how many portions of each food group you have eaten
- Once you have entered all the information, click on the spreadsheet tab "My Eatwell Guide"
- This pie-chart will show you how similar your Eatwell Guide is to the official Eatwell Guide

B. What does your Eatwell Guide look like?



Make a copy of your Eatwell Guide in the space below. Add up the total portions from the 'foods high in sugar, salt and fat' graph and fill in the box on the right, using your own scale.



14

Lesson 2 What is a Healthy Diet?



Activity 3: How Healthy is my Diet?



Compare your Eatwell Guide to the official Eatwell Guide below.

- What are the **similarities**?
- What are the **differences**?
- What surprised you about your Eatwell Guide?
- How did the pandemic affected your diet?
- How do you think you could **improve** your diet?

Research is also about helping people change. People can find this very difficult but the EACH-B app will help and show YOU how easy it can be to build small changes into your life.



15

Activity 2: My Eatwell Guide



Time: 15 minutes

One source of data the scientists collected in both the TeC-19 study and Southampton Women's Survey were food diaries, as one way of collecting evidence about diet and health.

A) Fill in the Excel spreadsheet - it is suggested the spreadsheet is downloaded using excel

Students need their homework from the previous lesson, either a photo of their fridge, or a food diary for one day. (NB. This is not going to be an accurate assessment of their diet; if students have not completed the homework they can quickly note down what they can remember, if time this activity could also be extended over a week) Using their fridge photo/food diary the students input the data for a typical day into the Excel spreadsheet and produce a pie chart.

For teacher information: There is only one column which allows information to be inputted - the **green** column. The rows at the bottom show the totals calculated for the different food groups. The columns have been locked, so that the formulas can't be changed. There are columns in this spreadsheet which show the calculation, but for ease and to avoid confusion, these have been hidden. Once the data has been inputted, the second worksheet shows the resulting pie chart alongside an image of the Eatwell Guide. If there is no access for all students to a computer then this activity would still be worthwhile carrying out as a whole class teacher led activity using one example. Please refer back to the notes about analysing the Eatwell Guide from the PD day to ensure that consistent messages are being given to the students.

B) What does your Eatwell Guide look like?



Time: 5 minutes

Students record their own Eatwell Guide in their booklet and compare to the Government's recommended Eatwell Guide, **'What does your Eatwell Guide look like?'**

Lesson 2

Health and Scientific Data



Activity 3: How Healthy is my Diet?



Time: 5 minutes

Discuss with students **‘What does your Eatwell Guide tell you about your own health?’**
‘What were the similarities and differences between your guide and the recommended guide?’
‘How did the pandemic affect your diet?’
‘How could your diet be improved?’

Lesson 2
What's in Your Fridge?

These fridge photos are from some of the women who took part in the Southampton Women's Survey. The photos provide a snapshot for the scientists collecting information on what the women ate.

What would a photo of your fridge reveal about your family's eating habits?

How might it change during the week?

Would it represent all the different foods that you eat? If not, why not?

Activity 4: How can we collect health data?

Discuss with your partner or group and list as many new different methods you can now think of that could be used to collect data about a person's health.

Homework task: Questions you could discuss at home with your family.

- How healthy do you think your family diet is across a few days or a week?
- How did the pandemic affect your family's diet?
- How well does it compare to the Government's recommended Eatwell Guide?
- How do you and your family aim to eat your 5-a-day fruit and vegetables?
- What changes could you suggest to improve your family's overall diet?

Activity 4: How can we collect health data?



Time: 5 minutes

Revisit the question at the start of this lesson, students now add any new ideas about the different methods which could be used to collect health data that they can come up with, e.g. Food diaries, questionnaires, body measurements, fitness/activity trackers, apps, monitors

Extension activity: What's in your fridge?

Scientists also used photos of people's fridges alongside food diaries and questionnaires when they were collecting data on people's diets for the Southampton Women's Survey. Using the images of their own fridges, students can discuss the following questions, **‘What does the photo reveal about your family's eating habits? Would it represent all the different foods you eat? If not, why not? How might it change during the week? How useful is this information?’**

Plenary



Time: 5 minutes

Students refer back to the lesson objectives and complete the assessment for learning activity in the orange boxes, feedback and share an interesting fact they have found out from the lesson.

Homework

Questions students could discuss at home: ‘How healthy do you think your family diet is across a few days or a week? How did the pandemic affect your family's diet? How well does it compare to the Government's recommended EatWell Guide? How do you and your family aim to eat your 5 - a - day fruit and vegetables? What changes could you suggest to improve your family's overall diet?’

Resources

- Lesson 2 PowerPoint slides
- Student booklet pages 11-16
- TeC-19 focus group transcript & audio recording
- Southampton Women's Survey newsletter
- **Student access to computers** with Eatwell Excel spreadsheet

Keywords

- evidence
- quantitative data
- qualitative data
- Eatwell Guide
- balanced diet