Fibre February Teachers' Guide

Welcome
This Fibre February activity pack has been designed to support teaching and learning about the importance of fibre in the diet.

Pages 3-7 provide background information for the teacher.

Pages 8-11 provide details about the activities and resources to bring fibre to life in the classroom.

Contents

Background information

Classroom activities and resources

What is dietary fibre?
The term ‘dietary fibre’ refers mostly to a broad group of carbohydrates which are not digested, nor absorbed in the small intestine.

Foods that are sources of fibre include starchy foods (such as bread, potatoes, pasta, rice and breakfast cereals), fruit and vegetables and pulses (such as red kidney beans or lentils). Different types of dietary fibre provide additional benefits, so consuming a variety of fibre-rich foods is recommended.

What are the benefits of consuming fibre?
Dietary fibre is important for keeping the digestive system healthy. It can increase the bulk of stools and help them to pass through the intestines more quickly. This may help to reduce constipation. There is also an association between increased dietary fibre intake and a reduced risk of cardiovascular disease, colorectal cancer and type 2 diabetes.

Certain types of fibre can also provide additional, specific benefits. Some types of dietary fibre can act as a food source for ‘good’ bacteria, helping them to increase in number and produce compounds that may have a benefit to human health.

Some fibre types (e.g. beta-glucans, a type of fibre found in grains such as oat and barley), have been shown to be able to help maintain normal cholesterol levels.

High-fibre foods provide a low amount of energy (calories) per gram. They may be able to keep people feeling fuller for longer, reducing overall energy (calorie) intake. There is some evidence to suggest that higher-fibre foods can aid weight management.

How much dietary fibre should we be consuming?

The Government has set out fibre recommendations for different age groups. These are shown in the table below.

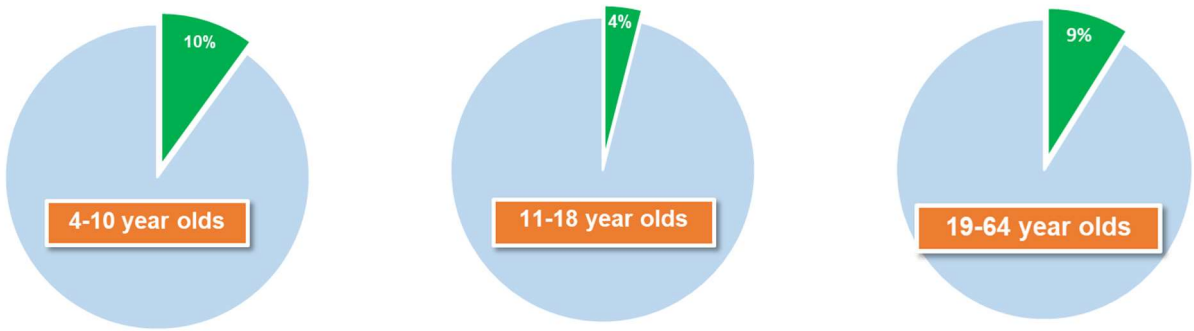
Age (years)	Recommended intake of fibre
2-5	15g per day
5-11	20g per day
11-16	25g per day
17 and over	30g per day

In the UK, no age group is currently consuming the recommended amount of dietary fibre (on average), and in the vast majority of each age group (90% or more) intakes are well below recommendations. The table below shows how much people of different ages eat and the number who manage to meet the Government recommendations.

Age	Average intake per day	% meeting recommendation
1.5-3 years	10.4g	12%
4-10 years	14.3g	14%
11-18 years	16.0g	4%
19-64 years	19.7g	9%
65+ years	18.7g	6%

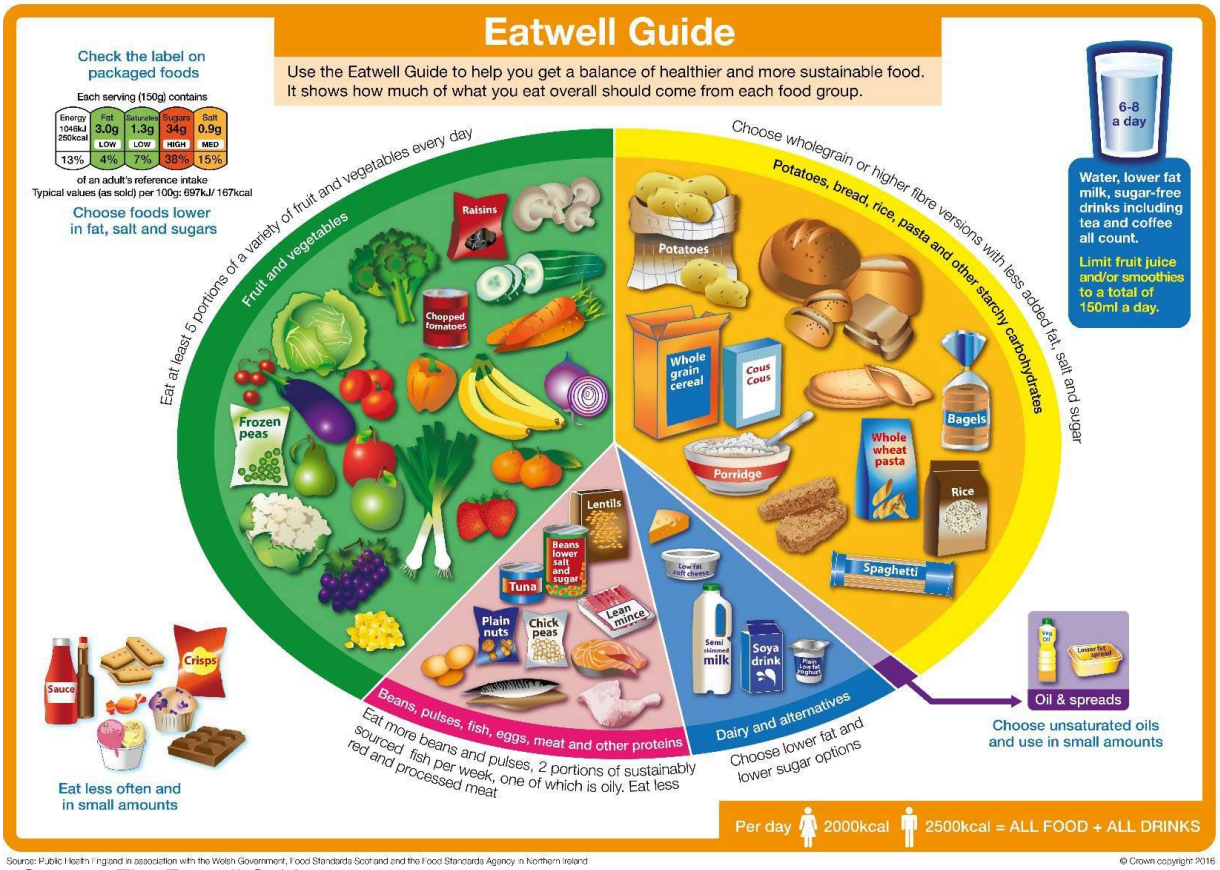
Source: NDNS results from years 9 to 11 (2016 – 2019)

Percentage of people eating the recommended amount of fibre for their age group (green)



The percentage not meeting their daily fibre recommendations ranges from **86-96%**, which means that many people may not receive the benefits that come with consuming the recommended amount of fibre each day. Evidence also suggests that **18% of adults** and **15% of children** consume no wholegrains (such as wholewheat pasta, wholegrain bread and brown rice), which could be severely limiting their fibre intake.

Where can fibre be found in food?
Fibre is found in food of plant origin, such as fruit, vegetables, starchy food like potatoes, and grains.



Source: The Eatwell Guide

The Eatwell Guide is the UK healthy eating model. It shows the proportions in which different groups of foods are needed in order to have a well-balanced and healthy diet.

The Eatwell Guide recommends consumption of potatoes, bread, rice, pasta and other starchy carbohydrates, which should be the base of each meal. Choosing higher fibre varieties of these products can provide more dietary fibre than their counterparts.

The table below shows the amount of fibre in selected starchy carbohydrates:

Carbohydrate source	Amount of dietary fibre per portion (g)
Wholegrain pasta (180g cooked weight)	7.56
Baked potato (220g cooked weight)	5.72
Wholemeal bread (2 x 40g slices)	5.60
Oats (45g dry portion)	3.51
Brown rice (180g cooked weight)	2.70
White bread (2 x 40g slices)	2.32

Sources:
British Nutrition Foundation - Find Your Balance, Get Portion Wise!
McCance and Widdowson - Composition of Foods Integrated Dataset

Eating five portions of fruit and vegetables a day is a key part of the Eatwell Guide. Not only do fruit and vegetables provide fibre, but they also contain a number of vitamins and minerals, as well as other plant compounds that may be beneficial to human health.

The table below shows the amount of fibre in selected fruit and vegetables:

Fruit or vegetable	Amount of dietary fibre (per 80g portion)
Broccoli (steamed)	3.04g
Carrots (boiled)	2.24g
Red cabbage (boiled)	1.84g
Banana	1.12g
Apple	0.96g
Orange	0.96g

Source: McCance and Widdowson's Composition of Foods Integrated Dataset

Fibre can also be found in foods such as pulses (beans, lentils and peas) as well as nuts and seeds, all of which are often only consumed in small amounts in the UK diet.

The table below shows examples of pulses, nuts and seeds that can contribute towards dietary fibre intake:

Pulses, nuts and seeds	Amount of dietary fibre per portion
Red kidney beans (120g canned, drained)	8.20g
Chickpeas (120g canned, drained)	8.50g
Green and brown lentils (120g boiled)	8.90g
Almonds (20g)	2.50g
Sunflower seeds (20g)*	1.60g
Brazil nuts (20g)*	1.14g

Source: McCance and Widdowson's Composition of Foods Integrated Dataset

**Dietary fibre (AOAC) is unavailable. Figures are estimated from NSP fibre.*

In the UK, products made from grains, such as bread and breakfast cereals, contribute the most to dietary fibre intake (between **38 and 44%**, depending on age group) with vegetables and potatoes (**21-32%**) being the second highest contributor. Fruit contributes between **6 and 16%**.

Top tips for increasing fibre intake:

- Base meals around starchy carbohydrates such as bread, pasta, potatoes and other grains, such as quinoa or couscous.
- Use wholemeal flour in recipes. Wholemeal flour provides more fibre than white flour, although white flour does still provide some fibre.
- Swap refined or 'white' carbohydrate sources (e.g. bread, cereals, pasta) for wholegrain varieties.
- Consume a variety of fruit and vegetables and aim for at least 5 A DAY.
- Try to include more pulses, nuts and seeds in dishes by adding to stews, curries and salads.
- Start your day with a high-fibre breakfast, including foods such as wholegrain cereals topped with dried or fresh fruit, wholemeal bread or whole fresh fruit.
- Opt for higher-fibre snacks such as fresh fruit or vegetables, nuts and seeds, rye crispbread, wholegrain crackers or nut butters.

Flour types

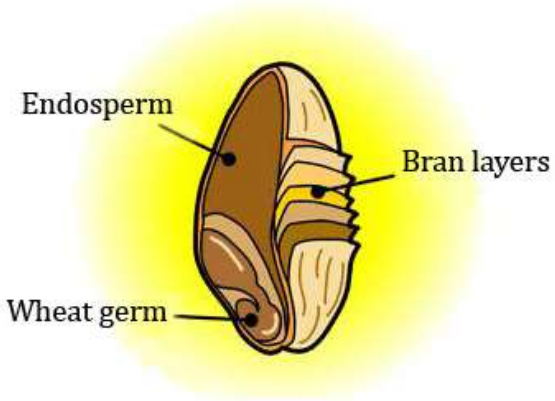
There are three main types of flour which are widely accepted and/or have legal backing:

- **Wholemeal flour**
  Wholemeal flour contains all parts of the cleaned, milled grain, i.e. 100% extraction. Wholemeal flour has exactly the same composition as the wheat from which it was milled.

- **White flour**
  This is made from the starchy endosperm only. Bran and germ are removed.

- **Brown flour**
  This is made by adding bran to white flour. There is no statutory definition of brown flour, so these flours can vary greatly. Some contain just coarse bran, others just fine and some a mixture of both.

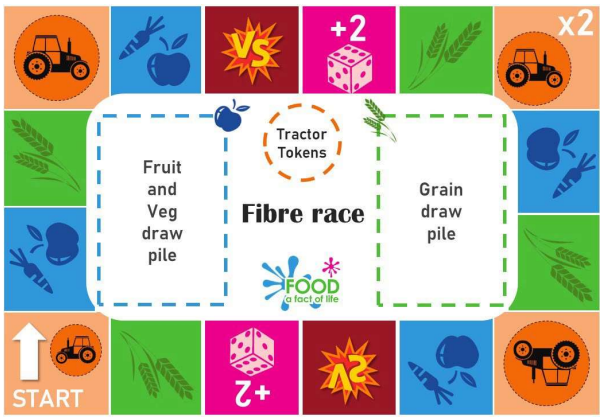
Diagram of a grain of wheat:



Classroom activities and resources

1) Fibre race game

The aim of this game is to be the first person to reach the recommended amount of daily fibre for their age group* by collecting and playing grain and fruit and vegetable cards. Each food card shows the amount of fibre in that food. When a card is played, this number can be added to an individual's score. Some cards require Tractor tokens to be 'spent' in order for the card to be played. Tractor tokens are collected on the way around the board.



*Age 5-11 years = 20g, 11-16 years = 25g, 17+ = 30g. There is a different board for each of these age groups.

For the Fibre race game, you will need:

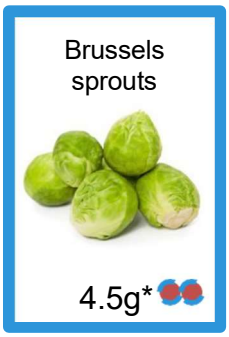
- The Fibre race game rules;
- The Fibre race game boards (print as A3);
- The Fibre race cards and counters (print and cut out);
- A dice;
- Pens and paper (for scoring)

Rules

1. Players begin by placing their counters in the bottom-left square of the board (labelled **START**).
2. The first player rolls a single dice and must move that number of spaces.
3. The player performs an action based on the tile they land on.
4. During their turn, the player may play as many grain or fruit and veg cards as they like (as long as they have enough **tractor tokens** to play that card – **see 'Card information'**).
5. When a card is played, the player adds the amount of fibre shown on the card onto their score, and returns any spent tractor tokens. Played cards should be returned to the bottom of the correct draw pile, face down.
6. The next player begins their turn. If, during their turn, a player passes **START** they may collect one tractor token.
7. The first player to reach the total grams of fibre shown on the game board, or more, is the winner!

Card information

This value indicates how many grams of fibre the food contains. When the card is played, this should be added to the player's score.
The number of orange circles shows how many tractor tokens are needed to play the card. If there are no orange circles, the card can be played at no cost.



2) Fibre cards

The Fibre cards show the amount of fibre provided per 100g and per portion of different foods.

Activity idea:
Give one card to each pupil and then ask them to line up in order of fibre amounts. You will need to state whether this is per 100g or per portion of the food.

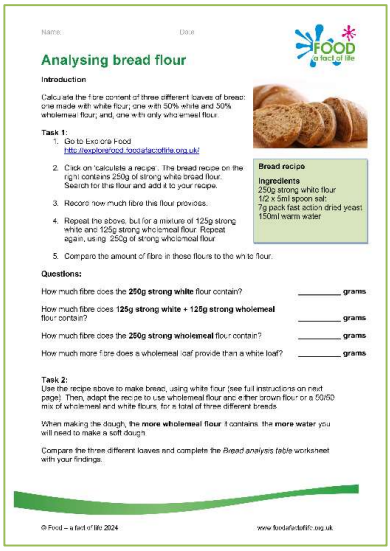
After they have ordered themselves, discuss which foods are the highest and which are the lowest in fibre. There are often a few surprises, and this is a useful activity to challenge misconceptions.

3) Recipe modification

These activities focus on increasing the amount of fibre provided in different dishes. The activities challenge pupils to use a simple nutritional analysis tool to calculate the fibre provided by the original and modified recipe.

The activities include:

- Bread – investigate the fibre provided by three different loaves of bread. Why not get pupils to work in small groups and make the different bread? A worksheet is included.
- Bolognese – use nutritional analysis to determine the fibre content of a basic Bolognese recipe and come up with different ways to boost the fibre content of the dish.
- Lamb korma – boost the fibre content of a meal!
- Pizza - determine the fibre content of a basic pizza recipe and come up with different ways to boost its fibre content.


Analysing bread flour

Introduction

Calculate the fibre content of three different loaves of bread: one made with white flour; one with 50% white and 50% wholemeal flour; and, one with only wholemeal flour.

Task 1:

1. Go to foodafactoflife.org.uk/
2. Click on 'calculate a recipe'. The bread recipe on the right contains 250g of strong white bread flour. Search for this flour and add it to your recipe.
3. Record how much fibre this flour provides.
4. Repeat the above, but for a mixture of 125g strong white and 125g strong wholemeal flour. Repeat again, using 250g of strong wholemeal flour.
5. Compare the amount of fibre in those flours to the white flour.

Bread recipe
Ingredients
250g strong white flour
1/2 x 5ml spoon salt
7g pack fast action dried yeast
150ml warm water

Questions:

How much fibre does the **250g strong white** flour contain? _____ grams

How much fibre does **125g strong white + 125g strong wholemeal** flour contain? _____ grams

How much fibre does the **250g strong wholemeal** flour contain? _____ grams

How much more fibre does a wholemeal loaf provide than a white loaf? _____ grams

Task 2:
Use the recipe above to make bread, using white flour (see full instructions on next page). Then, adapt the recipe to use wholemeal flour and either brown flour or a 50/50 mix of wholemeal and white flours, for a total of three different breads.

When making the dough, the **more wholemeal flour** it contains, the **more water** you will need to make a soft dough.

Compare the three different loaves and complete the *Bread analysis table* worksheet with your findings.

The last three dish worksheets also contain additional questions, helping to place the modification in context.

4) Diet case studies

Explore three different diets, looking at the fibre provided. Pupils are challenged to calculate the fibre provided by the diet, as well as answering questions about how the diet could be improved.

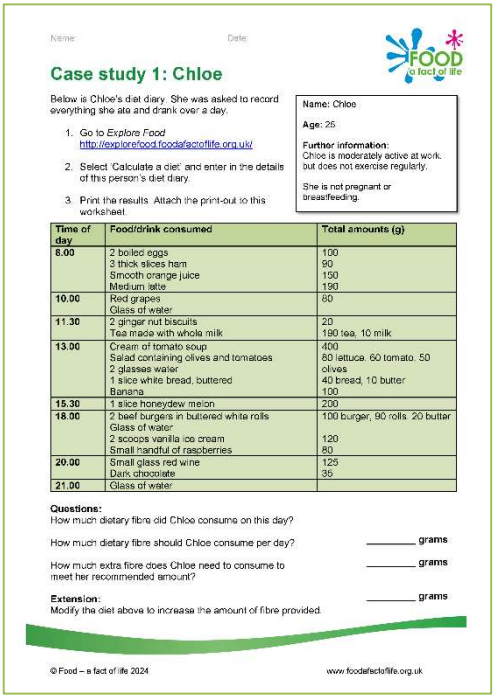
The three case studies are:

1. Chloe – calculating the fibre consumed in a day and whether she met her 30g/fibre target.

2. Ibrahim – calculating the fibre consumed and exploring how the diet overall could be improved, e.g. 5 A DAY.

3. Rhys – creating a diet for Rhys so that he reaches his daily fibre recommendation.

An information sheet is also provided, showing the fibre, energy, free sugars and fat recommendations per day.



Name: Date:

Case study 1: Chloe

Below is Chloe's diet diary. She was asked to record everything she ate and drank over a day.

1. Go to *Explore Food* http://explorefood.foodafactoflife.org.uk/
2. Select 'Calculate a diet' and enter in the details of this person's diet diary.
3. Print the results. Attach the print-out to this worksheet.

Name: Chloe
Age: 26
Further information: Chloe is moderately active at work, but does not exercise regularly.
She is not pregnant or breastfeeding.

Time of day	Food/drink consumed	Total amounts (g)
8.00	2 boiled eggs 3 thick slices ham Smooth orange juice Medium latte	100 90 150 190
10.00	Red grapes Glass of water	80
11.30	2 ginger nut biscuits Tea made with whole milk	20 190 tea, 10 milk
13.00	Cream of tomato soup Salad containing olives and tomatoes 2 glasses water 1 slice white bread, buttered Banana	400 80 lettuce, 60 tomato, 50 olives 40 bread, 10 butter 100
15.30	1 slice honeydew melon	200
18.00	2 beef burgers in buttered white rolls Glass of water 2 scoops vanilla ice cream Small handful of raspberries	100 burger, 90 rolls, 20 butter 120 80
20.00	Small glass red wine Dark chocolate	125 35
21.00	Glass of water	

Questions:
How much dietary fibre did Chloe consume on this day? _____ grams
How much dietary fibre should Chloe consume per day? _____ grams
How much extra fibre does Chloe need to consume to meet her recommended amount? _____ grams

Extension:
Modify the diet above to increase the amount of fibre provided.

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5) Find your fibre fortune

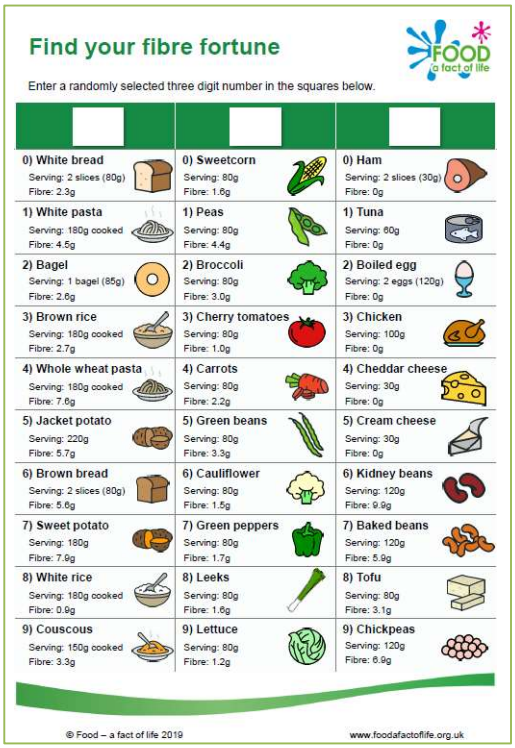
Challenge pupils to create a fibre-filled meals based on three randomly selected ingredients.

For Find your fibre fortune, you will need:

- The Find your fibre fortune instructions;
- The Find your fibre fortune worksheet - random food generator;
- The Store cupboard worksheet;
- Pens and paper.

Activity

1. Before looking at the Find your fibre fortune worksheet, ask pupils to pick three numbers between zero and nine.
2. Ask them to write their numbers in the boxes at the top of the worksheet. The number they have written in each column tells them the food item they will have to use to make their meal.
3. They also have access to the Store cupboard worksheet, which contains additional ingredients that can be used.
4. Ask them to calculate the total amount of fibre provided by their meal, using the information given.



Find your fibre fortune

Enter a randomly selected three digit number in the squares below.

0) White bread Serving: 2 slices (80g) Fibre: 2.3g	0) Sweetcorn Serving: 80g Fibre: 1.6g	0) Ham Serving: 2 slices (30g) Fibre: 0g
1) White pasta Serving: 180g cooked Fibre: 4.5g	1) Peas Serving: 80g Fibre: 4.4g	1) Tuna Serving: 60g Fibre: 0g
2) Bagel Serving: 1 bagel (85g) Fibre: 2.6g	2) Broccoli Serving: 80g Fibre: 3.0g	2) Boiled egg Serving: 2 eggs (120g) Fibre: 0g
3) Brown rice Serving: 180g cooked Fibre: 2.7g	3) Cherry tomatoes Serving: 80g Fibre: 1.0g	3) Chicken Serving: 100g Fibre: 0g
4) Whole wheat pasta Serving: 180g cooked Fibre: 7.6g	4) Carrots Serving: 80g Fibre: 2.2g	4) Cheddar cheese Serving: 30g Fibre: 0g
5) Jacket potato Serving: 220g Fibre: 5.7g	5) Green beans Serving: 80g Fibre: 3.3g	5) Cream cheese Serving: 30g Fibre: 0g
6) Brown bread Serving: 2 slices (80g) Fibre: 5.6g	6) Cauliflower Serving: 80g Fibre: 1.5g	6) Kidney beans Serving: 120g Fibre: 9.9g
7) Sweet potato Serving: 180g Fibre: 7.9g	7) Green peppers Serving: 80g Fibre: 1.7g	7) Baked beans Serving: 120g Fibre: 5.9g
8) White rice Serving: 180g cooked Fibre: 0.9g	8) Leeks Serving: 80g Fibre: 1.6g	8) Tofu Serving: 80g Fibre: 3.1g
9) Couscous Serving: 150g cooked Fibre: 3.3g	9) Lettuce Serving: 80g Fibre: 1.2g	9) Chickpeas Serving: 120g Fibre: 6.9g

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6) [Fabulous fibre swap poster]
Use the poster to inspire pupils to boost the amount of fibre provided in different dishes and meals.

The four examples given show simple ways in which fibre can be increased, such as:

- using wholemeal bread;
- adding vegetables;
- including a side-salad;
- using a mix of white and brown flour, e.g. pizza base.

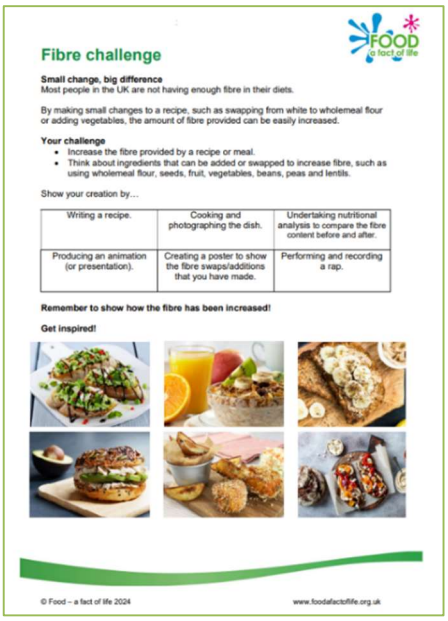
You could ask pupils to create their own 'fabulous fibre swaps' poster!

7) [Fibre challenge!]
Set your pupils the challenge of increasing the fibre in a recipe or meal. They can then present their work in a creative way, for example:

- cooking and photographing the dish;
- producing an animation (or presentation);
- creating a poster to show the fibre swaps/additions made;
- devising and recording an advert for their dish.

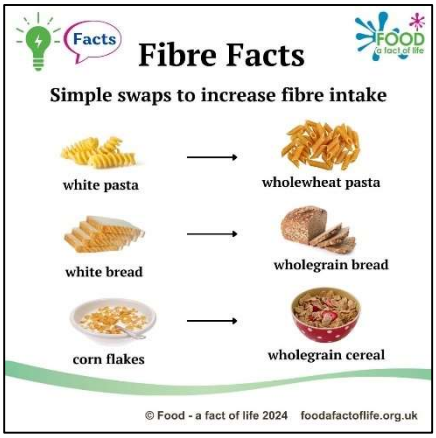
Take a look at the Fibre challenge sheet for more details.

We'd love to see what your pupils come up with! Share their work with us on X (Twitter) @Foodafactoflife using the hashtag #FibreFebruary, or email us at education@nutrition.org.uk



8) [Fibre fact cards]
Show the Fibre fact cards to your pupils to start a discussion about fibre.

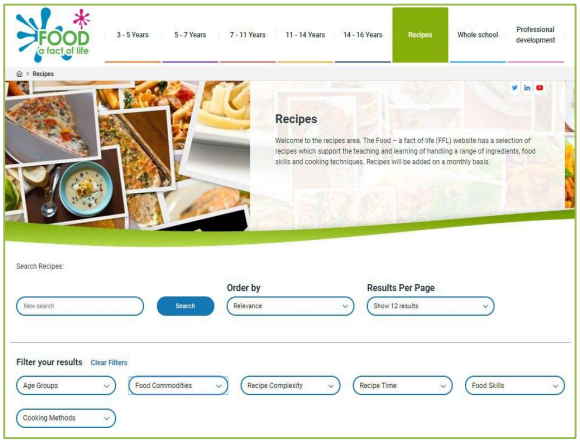
Why not share them on your social media channels or website to get your whole school community (and beyond!) focusing on fibre?



9) Get cooking!

There's a huge range of recipes on the *Food – a fact of life* website: https://www.foodafactoflife.org.uk/recipes/

Recipes can be filtered by age, complexity, time, food skill, cooking method (e.g. baking) and food commodity (e.g. cereals, like flour, and fruit and vegetables).



Organise cooking sessions for your pupils, demonstrating how fibre can be increased. For example, why not bake some bread or scones?

10) Where does food come from?

Explore where wheat and other cereals come from by using the resources available on *Food – a fact of life* in Fibre February.

5-7 Years
7-11 Years
11-14 Years
14-16 Years