There are seven chapters that describe digestion and its problems.

1. **Introduction** describes the glossary of terms, quick questions, roll over highlights etc..


3. **Major food groups** provides an overview of the structure and function of fats, carbohydrates and proteins.

4. **Micronutrients and fibre** covers their sources and role as components of a balanced diet.

5. **Stages in digestion** gives an overview of the enzymes involved in the process.

6. **The digestive system** is a review of how the healthy digestive system works, based on an interactive diagram.

7. **Disorders of the digestive system** provides a review based on an interactive diagram.
Curriculum links (using the COL keyword scheme)

Humans & other animals
Human health: diet
Human health: medicines
Nutrition & digestion - generally
Enzymes in digestion
Stomach acid & bile

Web links

Heart risks
www.schoolscience.co.uk/content/4/biology/abpi/heart/heart8.html

Copper in health
www.schoolscience.co.uk/content/4/biology/copper/copch1pg1x.html
Using the resource

1 - An introduction to the digestive system

Introduce the subject by asking pupils how we get the energy we need to survive. Develop the idea that it comes from eating but we have to break down the foodstuffs and absorb them into our bloodstream. This is the job of the digestive system.

Use worksheet 1 with pages 6 and 7 of the electronic resource to get students to find out the main parts of the digestive system.

You might then put the students into expert groups. Each group has five students who then go away and become an expert about a section of the digestive system:

- mouth and stomach
- liver, gall bladder and pancreas
- duodenum and ileum
- small intestine and large intestine
- rectum and anus

The groups then reassemble and the experts share their knowledge to find out how the parts are put together to make the whole system.

2 - An introduction to diet

Use worksheets 2 and 3 with pages 2 to 5 of the electronic resource to get students to think about and understand what we eat and the issues of diet.
Parts of the digestive system

Use the information on page 6 of the electronic resource to add labels to this diagram.
Use the information on page 6 of the electronic resource to complete the table.

<table>
<thead>
<tr>
<th>Section</th>
<th>What's its job?</th>
<th>How does it do its job?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouth and stomach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver, gall bladder and pancreas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duodenum and ileum</td>
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<tr>
<td>Small intestine and large intestine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectum and anus</td>
<td></td>
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</tr>
</tbody>
</table>
**Do you eat a healthy diet?**

A. Read pages 3 & 4 of the electronic resource.
B. Complete question 3 on the website (league table of fat content).
C. List the food you ate yesterday (try to keep the relevant food labels).
D. Decide which nutrients are in each item and tick the appropriate box.
E. Note down the amount of each nutrient (if you can find the information from labels or food tables).

<table>
<thead>
<tr>
<th></th>
<th>Fats</th>
<th>Carbohydrates</th>
<th>Proteins (f)</th>
<th>Proteins (m)</th>
<th>Fibre</th>
<th>Iron</th>
<th>Vitamin C</th>
<th>Calcium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced diet</td>
<td>74g</td>
<td>277g</td>
<td>45g (f)</td>
<td>55g (m)</td>
<td>18g</td>
<td>0.015g</td>
<td>0.04g</td>
<td>0.8g (f)</td>
</tr>
<tr>
<td>(15 to 18 yr old)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your food (total)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>List each item below</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Add up each vertical column and compare your values with those of a healthy diet.

2. Do you eat a balanced diet?

3. Look at your diet: what foods should you eat less or more of to eat a balanced diet?

4. Look at your diet: which foods in your diet do you need to be careful with to ensure that you don’t become overweight?
Poor diets and weight problems

Approx. 17% of 15-17 year olds in the UK are overweight.

1. Why do you think this is so? (Think about where they buy their food, whether this is a balanced diet, how much exercise they get.)

   Remember, if you don’t use up all the energy you take in you are in danger of becoming overweight.

2. What do you use food energy for?

3. What health problems are caused by being overweight?

   Think about your teeth, your heart and any other diseases you know about (eg diabetes). (See Risks to the heart, The heart and circulation)

4. How can these problems be treated?

   Think about how you would change a bad diet to a better one and what increasing exercise does for the body.

5. How can doctors treat those people who are unfortunate enough to get heart disease and have blocked coronary arteries?

6. Why is there so much discussion about obesity?

7. What effect does it have on the life of the individual?

8. What effect does it have on the community in general?
Role play - Doctor, I’ve got a problem.....

In pairs, decide on the dialogue for your consultation and enact it in front of the class. Members of the student audience can comment on the doctor’s clinical knowledge and decision making and the lifestyle choices of the patient.

Patient with an assigned, suspected digestive problem
• describes their symptoms
• asks the doctor what has happened.

Doctor
• explains what has happened.

Patient
• asks why this has happened
• and what treatment is needed

Doctor
• explains investigation if needed.
• explains what treatment he would suggest and how the patient can prevent future attacks.

Decide what age your patient is and therefore whether there any additional risks.

Indigestion
Look at page 5 (Stages in digestion), page 6 (The digestive system - rollover dots to get the text for stomach & small intestine) and page 7 (Disorders of the digestive system - rollover dots to get the text for acid pain).

Ulcers
Look at page 5 (Stages in digestion), page 7 (Disorders of the digestive system - rollover dots to get the text for indigestion and endoscopy).

Diarrhoea and vomiting – poor nutrient absorption
Look at page 6 (The digestive system - rollover dots to get the text for water absorption by large intestine) and page 7 (Disorders of the digestive system - rollover dots to get the text for vomiting, diarrhoea, poor nutrient absorption).

Lactose intolerance
Look at pages 5 (Stages in digestion) and page 7 (Disorders of the digestive system - rollover dots to get the text for lactose intolerance).

Coeliac disease (gluten intolerance)
Look at pages 5 (Stages in digestion) and page 7 (Disorders of the digestive system - rollover dots to get the text for coeliac disease and poor nutrient absorption).

Constipation
Look at pages 5 (Stages in digestion) and page 7 (Disorders of the digestive system - rollover dots to get the text for constipation and sigmoidoscopy).