BMES Online www.bmesonline.org.uk

BMES Online is a dedicated education website for food teachers and students. It not only provides the latest BMES news and information, but contains interactive programs, teachers' notes and students' worksheets, all available to download for FREE. Students can design their own burgers in the Cy-Burgers program; shop in the virtual multi-cultural foodstore in The Global Kitchen and become a marketing director in Campaign.

All BMES resources can be ordered on the website.

These are some of the many endorsements BMES Online has received from teachers.

"Excellent, one of the best Food Technology websites I have seen. Pupil friendly and relevant. Cy-Burgers makes HACCP interesting for pupils. I will definitely use it with year 9 students." *(Teacher in Wolverhampton)*.

"Very entertaining but educational and informative too." *(Teacher in Hertfordshire).*

"Absolutely brilliant. The best food activity I have seen yet. Trialed with Year 9 class very successfully." *(Teacher in Gloucester)*.

CURRICULUM LINKS ENGLAND

Details are provided below of how different areas of the video and accompanying teacher notes can be used to support delivery of Food Technology in schools.

The sections on Sensory Testing, Nutrition, Legislation and Labelling are particularly relevant to food product design and development.

The opportunity for food product development...

- Find out customer views and preferences using a range of methods including ICT.

Student Activity - generate radar diagrams to record profile of a product.

- Identify physical, nutritional characteristics in order to develop design criteria and their own ideas.

Student Activity - evaluate existing products.

- Test existing products to assess their suitability.

Student Activity - evaluate existing products through product appraisal using sensory words to build comparative profiles.

The stages of food product development...

- Carry out sensory evaluation techniques.

Student Activity - carry out Sensory Tests to establish key attributes of products.

- Carry out modification and reformulation.

Student Activity - conduct sensory testing to find out consumer preferences and establish conclusions for modifications regarding taste, flavour, texture. Results can be recorded on a computer generated table/spreadsheet.

Labelling, information, legislation and codes of practice...

- Understand the requirements for conveying information to the end user

Student Activity - use ICT to produce a label for a particular food product.

Awareness of the social and economic implications of food production and technology including application of nutritional knowledge and appropriate use of resources...

- Apply nutritional knowledge when designing a food product.

Student Activities

use nutritional information to produce a product for a particular end user.

use nutritional analysis software to compare products.

analyse food products in relation to current ‘balanced diet’ guidelines.

CURRICULUM LINKS SCOTLAND

5-14 Environmental Studies - Technology

Design and make activities

- Sensory methods
- Sensory, hedonic and attitudinal descriptors
- Student worksheet - human senses
- Student worksheet - taste and smell test

Enterprise Activity
Food product development could be used as part of an enterprise activity. This can be written to cover the strands and outcomes for a design and make activity. The same information above could be used to teach sensory analysis skills, which are essential when developing a viable product.

Intermediate 2 / Higher in Health & Food Technology
The main areas this MVM links to are Intermediate 2 / Higher in Health & Food Technology although the same areas could apply to the Lifestyle and Consumer Technology context.

Three areas have been identified within the Course Content Grids

1 Product development
- Quality control
- Shelf life studies
- Consumer testing
- Sensory methods
- Sensory, hedonic and attitudinal descriptors
- Various sensory tests - ranking, rating, triangle test
- Conducting sensory tests
- Sensory profiles

2 Nutrition
- Importance of a balanced diet and the contribution a balanced diet makes to health
- Nutrients, their sources and function in relation to making choices about diet in relation to current dietary targets
- Multi nutritional value of meat
- Healthy methods of cooking

3 Safety and quality of food
- Beef labelling regulations

Core Skills - Information Technology
Some of the pupil activities indicate the use of research using websites, collating findings on spreadsheets, displaying the results of work using star profiles created in Excel or tables. These activities may be used in conjunction with the IT Core Skills Package linked to the Technological Project to contribute to the evidence required to obtain these Core Skills.
Reference: Home Economics - Core Skills IT - Producing a Report (Learning and Teaching Scotland)

Course choice
Prior to course choice this video will give an insight into possible careers in food product development and therefore may encourage pupils to choose to continue their experience in one of the home economics subjects.

CURRICULUM LINKS WALES

GCSE Design and Technology (Food Technology)

The links between the content of the MVM video/teaching materials and the above syllabus are within the syllabus sections of 'Developing, Planning and Communicating Ideas', 'Working with Tools Equipment, Materials and Components to Produce Quality Products', 'Evaluating Process and Products' and 'Knowledge and Understanding of Materials and Components'. Links between the MVM materials and these sections are identified below.

Developing, Planning and Communicating Ideas

- Identify essential criteria for inclusion in the specification, prioritise and use them to develop designs
- Use existing products as a source of ideas
- Consider moral, social, environmental and cultural influences on product design
- Take into account relevant safety legislation

Working with Tools Equipment, Materials and Components to Produce Quality Products

- Observe safety procedures in the working environment
- Develop and use a manufacturing specification
- Apply quality control techniques during preparation and manufacture

Evaluating Processes and Products

- Ensure, through testing and modification that the quality of products is suitable for the intended purpose
- Identify criteria to analyse the quality of existing products in terms of both design and manufacture

Knowledge and Understanding of Materials and Components

- Nutritional characteristics of food materials
- Sensory characteristics

GCSE Home Economics (Food and Nutrition)

The links between the content of the MVM video/teaching materials and the above syllabus are within the syllabus sections of 'Food and Health', 'Characteristics and Properties of Food', 'Food Quality' and 'Food, Technology and the Consumer'. Links between the MVM materials and these sections are identified below.

Food and Health

- Food choice
- Nutrient provision
- Nutritional needs of individuals
- Dietary guidelines for health

Characteristics and Properties of Food

- Food and the senses
- Developing and modifying recipes

Food Quality

- Health, safety and hygiene
- Process, manufacture and storage

Food, Technology and the Consumer

- Packaging and labelling

INTRODUCTION TO SENSORY ANALYSIS

What is Sensory Analysis?
Definition ‘the scientific discipline used to evoke, measure, analyse and interpret those reactions to characteristics of foods and materials as perceived through the senses of sight, touch, hearing, smell and taste’.
(Institute of Food Technologists 1975)

Sensory Analysis can be used to evaluate both existing and new food products.
Its function in industry is to establish the sensory qualities of products by scientific means so that the method of production can be maintained or modified.
Scientific principles are used so that there can be some confidence in the results obtained.

Food organisations employ trained assessors to carry out sensory testing for them. Everyone's tastes and perceptions of food are different so training is important to ensure that everyone is working towards the same principles when analysing food products.

Functions of Sensory Analysis in the Food Industry

New Product Development
During the process of product development, new food products are tested at various stages to ensure that they are acceptable to consumers and therefore more likely to be a success when launched in the market-place. The failure rate is high for new products so this ensures that every opportunity is taken to make sure the product meets consumer needs and wants.

For example a manufacturer of canned soups is planning to launch a new flavour ‘Spicy Tomato’. The new product development team have come up with three possible recipes with varying degrees of texture and spiciness. Carrying out sensory testing helps highlight which formulation will be most readily accepted by the consumer.

Product Improvement
Occasionally it is necessary to change or modify the ingredients in a food product. For example, a particular ingredient may become unavailable or too expensive to be utilised. New technology may bring about changes to the formulation of the product.

Sensory Analysis can be used to help modify and improve existing food products. For example, a sandwich manufacturer regularly uses a particular supplier of cooked bacon for the production of a BLT sandwich which is one of their best selling lines. Due to production problems with the supplier the sandwich manufacturer has to source the cooked bacon from elsewhere.

Samples of the sandwich containing bacon from the original supplier are compared with samples from the proposed new supplier. If the testing shows there is no difference then the sandwich manufacturer can go ahead with a contract with the new supplier. If a difference is perceived then another alternative supplier will need to be sought.

Quality Control
Samples of products are taken at regular intervals during production for quality control checks. This ensures the product is being made to the correct specification and ensures the quality remains the same throughout the production run.

For example samples of beef burgers are regularly removed from the production line and tests conducted to check that the products being made are consistent with the product specification.

Eating Quality
The Meat and Livestock Commission has for many years undertaken research and development projects in order to understand the factors affecting red meat eating quality and to help industry adopt best practice. One such project recently undertaken has involved sampling beef from retail outlets throughout Britain. The objective of this project was to establish overall consumer satisfaction levels and to use individual retailer information to help focus on where improvements in eating quality could be made. An important tool used in this project to quantify eating quality attributes was sensory analysis.

Shelf Life Studies
Products are tested at various periods to discover the optimum shelf life for a product before the quality deteriorates.

For example a manufacturer of party cakes will conduct sensory testing to establish the length of time a cake can be stored for before the eating quality, such as texture and moisture levels, deteriorates so that the product is no longer enjoyable to eat. This assists with decision making for display-until and use-by dates on the cake packaging.

Consumer Testing
Consumer testing unlike sensory analysis is carried out by untrained assessors in uncontrolled conditions. For example new products can be tried by consumers to obtain an initial response to their acceptability. This may be done in the consumer's own home or a retail environment. This helps to 'shape' the product prior to further development work.

STUDENT ACTIVITY

- **Discussion:** Imagine you are working as part of a Product Development Team, discuss when and how you think Sensory Analysis would help you when developing new products.

Discussion points could include:

- Analysing a competitor's products by using sensory analysis to describe product characteristics
- Testing products during formulation and development
- Checking acceptability of new products with customers

SENSORY METHODS

There are a variety of sensory analysis tests that can be conducted in industry to establish important characteristics about food products.

Difference Tests
These tests are used to find out if there are any perceived differences between two products. There are a number of difference tests to choose from:

- Paired comparison test
- Triangle test
- The two-out-of-five test

These tests are most useful in the process of product development. For example, a food manufacturer may conduct some testing to establish if there is a significant effect on taste when reducing the amount of dried fruit to produce an economy breakfast cereal product.

- Paired Comparison Test

Coded samples are presented to assessors in pairs to test for a particular attribute or characteristic. The assessor may be asked - which of the two samples is sweeter/crunchier/ spicier? For example a manufacturer of chocolate cookies could test his own brand against those of the market leader to find out which variety was preferred.

- Triangle Test

Coded samples are presented in sets of threes. Two of these samples are identical. The assessor is asked to identify the odd one out. For example a soft drinks manufacturer is hoping to produce a reduced sugar orange cordial and wants to find out if any significant change in taste will be detected.

- Two-out-of-five Test

Five coded samples are presented to the assessors. Two of the samples are the same and the remaining three are the same. The assessor is asked to select which two are different.

Ranking Tests
Ranking tests are used to test for the order of intensity or degree of a particular attribute from a series of samples.
A set of coded samples are presented in a random order to the assessors. The assessors are asked to rank the samples in the order of the chosen attribute.
For example a manufacturer of ready meals is planning to launch a chilli-con-carne to add to their current product range. Eight samples are made with varying quantities of chilli powder added. Assessors then rank them on an agreed scale of spiciness/hotness.
For example 1 = Extremely Spicy,
8 = Extremely Bland.

Rating Tests
Rating tests are used to rate one or more attributes according to a scale. A set of coded samples are presented to assessors and asked to rate for a particular attribute and/or preference. For example a manufacturer of a meat pie is trying to establish the level of onion to be included. Samples are prepared with varying levels of onion incorporated and assessors are asked to rate for intensity of onion flavour and the degree of liking.

Descriptive Tests Or Profiling
Profiling aims to provide a description about aroma, appearance, flavour and texture of a product. Appropriate sensory characteristics are selected and then rated on an intensity scale. 0 is used when the attribute cannot be detected through to 5 if the intensity of the attribute is great.
Two similar products can be compared to establish differences between the two. Results are plotted on a chart.

SENSORY, HEDONIC AND ATTITUDINAL DESCRIPTORS

Sensory Descriptors
Sensory Descriptors describe our sensations in response to foods and beverages, as these are interpreted from the stimulation of our senses. They include:

Mouthfeel / Texture	Appearance	Taste / Flavour	Aroma / Smell
Hard	Greasy	Salty	Smoky
Fizzy	Pale	Sharp	Roasted
Crisp	Runny	Aftertaste	Sweet
Thin	Soggy	Sweet	Fishy
Crunchy	Smooth	Creamy	Cheesy
Watery	Colourful	Herby	Fruity
Powdery	Moist	Fatty	
Lumpy	Hot	Meaty	
Foamy	Dark	Sour	
Hot		Tasty	
Tender		Acidic	
Flaky		Stale	
Dry			
Fine			
Rubbery			
Wet			
Firm			

Hedonic Descriptors
Hedonic descriptors describe our likes and dislikes. Examples include delicious, appetising, enjoyable, attractive, good, bad, enjoyable, disgusting, awful, pleasant, acceptable and tasty.

Attitudinal Descriptors
Attitudinal descriptors describe beliefs held about foods and drinks. Examples are healthy, traditional, wholesome, comforting, calming.

STUDENT ACTIVITY

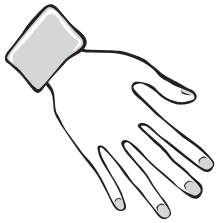
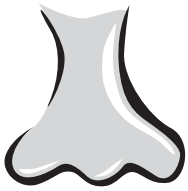
- Discuss words commonly used by students to describe food products (lovely, nice, yucky).
- **Discussion:** why are these words not particularly helpful in Sensory Terms in helping to describe a product? Include points about individual tastes and preferences.

STUDENT WORKSHEET - HUMAN SENSES

The senses are an animal's way of collecting information on the outside world or about the state of its body. Aristotle described five senses: sight, hearing, touch, taste and smell.

Which senses tell us that it is raining?

Complete the following table to show how our senses help us to analyse food products.

The importance of the senses in relation to food products	
	
	
	
	
 	

STUDENT ACTIVITY

Use the above table to record words about a range of food products. For example, the use of clear, fizzy and flavoured water generates reactions to all senses.

Discuss the importance of senses in helping consumers to make decisions/form opinions about foods and drinks.

STUDENT WORKSHEET - TASTE AND SMELL TEST

Aim of test: to enable students to identify different flavours.
How to set up: use three different flavours of clear fizzy water and label each sample with one of the corresponding symbols in the chart below.

TASTE CHART

Taste a little of each sample and write down the flavour you think it is in the chart below.

Sample	Tastes Like...
●	
■	
t	

Aim of test: to enable students to identify different aromas.
How to set up: use three distinctive flavourings and place a little of each in identical containers. Suggestions: tomato purée, coffee granules, curry paste, cocoa powder, Marmite. Ensure students cannot see into containers so that they are not influenced by sight. Label each sample with one of the 3-digit random numbers on the chart below.

SMELL TEST

Please nose (smell) the samples and record your results in the table below

Sample	Smells Like...
341	
693	
194	

STUDENT WORKSHEET - TWO OUT OF FIVE TEST AND RATING TASK

Aim of test: to enable students to distinguish between different aromas.
How to set up: use two distinctive flavourings. Suggestions: Peppermint flavouring, almond flavouring, lemon flavouring. Place a little of one flavouring on two pieces of cotton wool. Place a little of the other flavouring on three pieces of cotton wool. Place in identical containers. Ensure students cannot see into containers so that they are not influenced by sight. Label each sample with a random symbol.
For example, q, t, P, w, %.

TWO OUT OF FIVE SMELL TEST

Please nose (smell) each of these sets of samples, one set at a time.
Decide which two of each set of five are different from the other three.
Enter the symbols of these two samples in the boxes below.

Set One

2 out of 5	

Set Two

2 out of 5	

Aim of test: to enable students to use their sense of hearing to establish soft/crisp attribute.
How to set up: use an identical variety of crisp for all the samples. One sample is opened and left overnight, second sample left open for 8 hours, third sample opened just prior to testing. Label each sample with one of the 3-digit random numbers on the chart below.

RATING TASK

Please taste each of the three samples of potato crisps and rate each one on a scale of 1 to 6 for softness/crispness, as described below:

1= extremely soft
2= moderately soft
3= slightly soft
4= slightly crisp
5= moderately crisp
6= extremely crisp

Sample	Rating
862	
245	
458	

STUDENT WORKSHEET - RANKING TEST AND TRIANGLE TEST

Aim of test: to enable students to distinguish between different flavours and to rank according to their hedonic preferences.
How to set up: use four varieties of a food product eg sausage or crisps or biscuits. Label each sample with a symbol on the chart below. Record results from 1 - 4 with 1 being the one that is liked the most and 4 being least liked. Results could be collated to establish overall ranking order.

RANKING TEST

Taste the samples and put them in the order you like the best.

Sample Code	Order	Comments
*		
✣		
◆		
$		

Aim of test: to enable students to detect a difference between two products.
How to set up: use two biscuit products. For example, a standard digestive biscuit and a reduced-fat version of the same brand. Use two samples of the standard biscuit and one of the lower-fat version. Label each sample with one of the 3-digit random numbers on the chart below.

TRIANGLE TEST

Taste the samples and identify the odd sample
(Tick against the odd sample).

323	
826	
574	

EXAMPLES OF SENSORY DESCRIPTORS

Hot	Crunchy	Greasy
Colourful	Cold	Hard
Soft	Lumpy	Smooth
Pale	Red	Runny
Foamy	Watery	Stale
Fresh	Dry	Sweet
Roasted	Thin	Fizzy
Crispy	Soggy	Dull
Green	Flaky	Dark
Sharp	Rubbery	Creamy
Herby	Tender	Sticky
Bitter	Chewy	Firm
Tough	Warm	Spicy
Moist	Sour	Acidic
Fishy	Burnt	Fruity
Round	Square	Smoky
Brown		Liquid

STUDENT ACTIVITY

- Decide which Sensory Descriptors in the word bank relate to texture/mouth feel, taste/flavour, appearance and smell/aroma.
- Create a table on the computer and record your results.

Discuss which words you would use to describe:

a hot chocolate drink
a ham and mushroom pizza
a bacon sandwich

- Students create their own word bank of Sensory Descriptors in the form of a poster using ICT.

CONDUCTING SENSORY TESTING

The food industry uses sensory analysis techniques to determine the sensory qualities of a food product. Scientific principles are utilised to ensure that the results are reliable and consistent. Therefore sensory analysis takes place under strict controlled conditions and uses trained assessors.

Experimental Design
The purpose of sensory analysis is to analyse a food product in sensory terms, attribute by attribute. The aim of this analysis may help establish which elements of the production process contribute to the overall acceptability of the product.

There may be several stages in the production process which contribute to the characteristics of the final product. These various stages are known as variables. For example in meat production there is a wide variety of variables starting with the farm and ending with sales at retailers. These variables include breeding and genetics, feeding, transportation, conditioning and ageing of meat and storage in correct chilled conditions. In experimental design these variables can be manipulated to establish their effect on the final product.

Standards and Controls
There is a variety of factors which can influence testers but which can be controlled. It is important that sensory testing is conducted in a controlled way to ensure the results are reliable.

Fair testing can be achieved by following these guidelines.

Testing takes place in sensory booths which provide an environment whose lighting and temperature can be controlled. Individual booths help to prevent testers communicating and influencing each other.

Testers must have clear instructions to work to so that they fully understand what is required of them. To eliminate any carry-over effects from one sample to the next, testers should be allowed water and / or a bland tasting cracker to cleanse their palate.

Samples should be prepared in the same way using identical equipment. If samples are to be cooked then cooking procedures must be the same and the samples presented at the same temperature.

Samples should be presented in identical containers and of equal quantity, size or shape. Each sample should be coded using either symbols, random letters of the alphabet (not a, b, c) or 3 digit random numbers.

The order that samples are presented to assessors should be varied. This ensures ‘blind’ presentations to assessors.

SENSORY PROFILES

Generating a Sensory Profile about a product allows for a full description of sensory attributes of the product to be recorded. This is very useful when comparing two similar types of products eg comparison of supermarket own brand biscuits or pork sausages from two different butchers. It is possible to make comparisons about two products very quickly and easily.

How to conduct and record Sensory Profiling using Excel

Using the bank of Sensory Descriptors choose six words which would be suitable for the products being profiled.

Open a clean sheet in Excel and fill in a sensory descriptor in cell A2 eg spicy. Continue with other sensory descriptors in cells A3 to A7.

In cell B1 type in the name of the first product being tested eg Sample 1. In cell C1 type in the second sample being tested eg Sample 2.

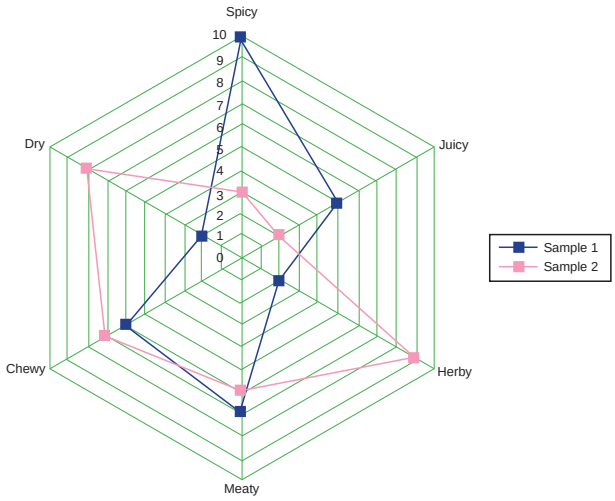
Taste sample 1 and decide on a value for the sensory attribute being rated. 10 is used if the sensory attribute is very apparent in the product, the value of 0 is used if the attribute cannot be detected in the product. (The values of 0-5 could be used). Repeat the process for the tasting of sample 2. See the diagram below.

Comparison of supermarket pork sausages

	Sample 1	Sample 2
Spicy	10	3
Juicy	5	2
Herby	2	9
Meaty	7	6
Chewy	6	7
Dry	2	8

Highlight all the information in the chart and:

- Click on Chart Wizard from the tool bar.
- Click on radar from the chart type options available.
- Click on the chart sub-type required.
- Click on next to see a preview of the star profile.
- Click on next and enter a title for the star profiling.
- Click on next and decide on chart location.
- Click on finish.



Completed product profiles can be easily highlighted and copied into Word documents.

Profiling allows a picture of a product's sensory characteristics to be drawn up. Comparisons can be made by placing one profile on another.

For example a butcher is launching a new range of barbecue sausages and is using profiling to obtain consumer opinions about the characteristics of the new range. Decisions can be made as to which variety is going to be most popular with consumers.

BEEF AND NUTRITION

The Importance of Red Meat
Beef and the other red meats, pork and lamb, as well as poultry are eaten regularly by around 97% of the UK population and can play an important role in a balanced diet. Red meat and meat products are valuable sources of a number of important nutrients such as iron, zinc, Vitamin D and selenium. In addition the fat content of lean red meat has been significantly reduced over the past decades.

Healthy Eating
Making the right choices of food and drink and taking regular exercise can help prevent coronary heart disease and many common cancers and other diseases such as osteoporosis. No single food contains all the nutrients we need. It is important to eat a wide variety of different foods each day including plenty of fruit and vegetables and starchy foods like pasta, rice and potatoes plus moderate amounts of lean red meat, such as beef and moderate amounts of milk and dairy products.

Beef and Protein
Meat and meat products contribute on average 32% of our total protein intake. The protein in beef is highly digestible - around 94% compared with a digestibility of 78% in beans. Beef is an excellent source of high biological value protein, providing indispensable (essential) amino acids.

Beef and Iron
Beef is one of the best sources of easily absorbed iron and it is estimated that beef and the other red meats provide about 14% of our recommended daily iron intake. Beef also enhances the absorption of iron from other foods, such as vegetables and cereals when eaten at the same time. Iron helps carry oxygen around the body, produces energy and is vital for a healthy immune system. A lack of dietary iron can lead to iron deficiency anaemia.

89% of women of childbearing age have an iron intake lower than the recommended intake. Toddlers are also particularly at risk, with iron deficiency being the most commonly reported nutritional disorder during early childhood. Iron deficiency is associated with impaired cognitive development among schoolchildren. Iron-deficiency anaemia is one of the most common nutritional deficiencies in the UK, particularly in children and young women.

Beef and Zinc
Beef is a good source of readily absorbable zinc. We get about 30% of our dietary intake of zinc from red meat and meat products. Zinc helps maintain the function of the immune system and is needed for wound healing and healthy skin, hair and bones.

Children need zinc for growth and development; however insufficient zinc intakes have been found to be widespread among boys and girls. Increased zinc intakes are associated with greater bone mineral density in late pre-menopausal women.

Vitamin D
Meat, including beef, is considered the largest natural contributor to dietary intake of vitamin D, second only to fat spreads which are fortified with vitamin D. We get about 21% of our vitamin D intake from meat and meat products. Vitamin D aids the absorption of calcium and is involved in bone health. Vitamin D deficiency is extremely prevalent in the elderly and low levels have been linked with a number of diseases associated with ageing. Vitamin D has recently emerged as a potentially protective agent against colorectal cancer.

Other Nutritional Benefits of Beef
Beef is a good source of selenium, an important antioxidant mineral which may have anti-ageing and anti-cancer properties. We get about 32% of our selenium intake from meat and meat products, including beef. Selenium is needed for the proper functioning of the immune system and is also thought to help to prevent heart disease. Meat and meat products also provide useful amounts of magnesium, copper, cobalt, phosphorus, chromium and nickel.

Beef and Fat
The amount of fat in beef has been considerably reduced over the last few decades through new breeding and butchery techniques. Fully trimmed raw beef typically contains only 5% fat. This compares well with food such as Cheddar cheese which contains an average of 34% fat. Unlike other foods most of the fat in meat can be removed by trimming before cooking or skimming from dishes such as casseroles prior to serving. Lean red meat is not a major contributor of fat, saturated fat or cholesterol to the diet. Only 6% of our total fat intake, 7% of saturated fat intake and 10% of our cholesterol intake comes from carcase meat. About half of the fat found in red meat is in the unsaturated form that is believed to be healthier. Surveys show that meat is a major contributor of mono-unsaturated fat in the diet. About 15% of our polyunsaturated fat intake comes from meat and meat products.

What The Experts Say
"Lean red meat is a nutritious food and plays an important role in a balanced diet. As well as being a good source of protein, it provides B Vitamins and key minerals such as zinc, selenium, potassium and iron." - Dr Wendy Doyle, British Dietetic Association

"Some iron is certainly present in vegetables, fruit and cereals, but its absorption by the body is increased when eaten with red meat at the same time." - Dr Hilary Jones, GMTV and Sunday magazine doctor

"A small increase in average consumption of lean beef and lamb could also be expected to provide a beneficial increase in iron and zinc intake." - Dr Frankie Robinson, British Nutrition Foundation

"The inclusion of red meat in the diet of the elderly can make a major contribution to vitamin D intake, as well as to iron and B12 intake and status, and should be encouraged as a healthy and acceptable part of the diet of older people."
- Dr Caroline Bolton-Smith, Head of Nutritional Epidemiology, Medical Research Council Human Nutrition Research.

STUDENT ACTIVITY

- Visit major retailers (or related Internet websites) to find out about 'healthy eating' ranges currently available. Collate information on a spreadsheet using ICT.
- Use labels from a 'standard product' and compare nutritional content with 'reduced/lower fat' version.
- Carry out a taste panel on a 'standard product' and compare with a 'reduced/lower fat' version. Using appropriate sensory descriptors record and compare the profiles of the two products (using Excel to produce a radar diagram).

BEEF LABELLING REGULATIONS

EU beef labelling regulations came into full force at the beginning of 2002. These regulations are designed to give consumers more information than ever before about the origin of the beef they purchase and greater reassurance.

It is now compulsory for all beef and veal covered by the regulations to carry a traceability code and details of its country of origin. The regulations also control the use of other information appearing on labels.

What products are covered by the regulations

All fresh and frozen beef (including veal) must comply with the beef labelling rules. This includes all cuts such as quarters and sirloin or rump steak. Minced beef and uncooked beef burgers with no added ingredients (eg soya protein, cereal binder) are also covered by the regulations. Products not covered include:

- Seasoned uncooked meat where the seasoning is either visible to the naked eye or clearly distinguishable by taste.
- Beef in processed products, eg processed beef burgers, steak and kidney pies or ready meals
- All cooked beef products
- Beef products sold in food service outlets such as restaurants and pubs. (However labelling information must be given to caterers so they can provide accurate details to customers on request.)

In general, the beef labelling regulations do not cover information controlled by other EU legislation or that which can be verified at the point of sale. This includes:

- The name of the cut of meat
- Weight
- 'Best before' date or 'Use by' date
- Storage and cooking instructions
- Name and address of the manufacturer, packer or seller.

Traceability

Under the regulations, all beef must be labelled with a traceability code at all stages of the supply chain within all EU member states. This code allows the beef to be traced back, stage by stage, to the specific animal or group of animals from which it originated.

Origin
The regulations also require the country of origin of the product to be clearly indicated on the label. To ensure that the 'origin' is meaningful, four pieces of information must be provided:

- The country/state where the animal was born.
- The country or countries where the animal was raised.
- The country where the animal was slaughtered, and the official number of the abattoir*
- The country or countries where the meat was cut, and the official number* or address of each relevant premises.

*Note: official numbers are those allocated by the authorities to premises licenced for slaughtering or cutting meat.

In the UK, separate beef labelling authorities operate in England, Scotland, Wales and Northern Ireland. Pre-approval is needed for statements such as 'farm assured', 'grass-fed', terms such as 'halal' or 'kosher' or any reference to origin relating to an area smaller than a country.

For example, a label using the words 'English beef' requires pre-approval, whereas 'British beef' does not. Product labelled 'British beef' must come from animals born, reared and slaughtered entirely within the UK and is therefore covered by the compulsory country of origin information rules. England is not a country for beef labelling purposes.

Other Information
The regulations also cover additional information given voluntarily on beef labels. This must be approved in advance by the authorities and its accuracy verified by an independent Government approved organisation.

What To Look For In Shops
Most pre-packed beef must be labelled on its packaging. For non-pre-packed beef and beef pre-packed on the premises where it is sold, the information must be displayed clearly and visibly for all consumers and linked to the beef concerned. The labelling regulations also cover information given at the point of sale in advertisements, posters, announcements and leaflets associated with the beef.

Further Information
The following websites provide further information on food safety and nutrition issues:

Department For Environment Food and Rural Affairs (DEFRA)
www.defra.gov.uk

Food Standards Agency
www.food.gov.uk

British Nutrition Foundation
www.nutrition.org.uk

British Meat
www.meatmatters.com

STUDENT ACTIVITY

- Investigate what information is legally required to be present on the label of a food product.
- Many labels contain other information - why do manufacturers/retailers provide this additional labelling for consumers?
- Use ICT to produce a label for a particular food product.
- Why is labelling on products important to consumers?