

ABOUT THE UNIT

This unit uses a farm visit as a backdrop to children learning that there are many aspects to keeping healthy and healthy balanced diet. Children learn about the heart and how heart beat is affected by exercise and relate this to what they already know about movement and exercise. They think about how a farmer keeps animals healthy and how a balanced diet and exercise can keep them healthy. They learn how the countryside can be a good place for healthy outdoor exercise, e.g. mountain biking, walking, pony trekking.

There is opportunity to carry out experimental and investigative work.

Work in this unit also offers opportunities for children to find out how early scientific ideas about diet and health were tested. It helps them to use knowledge and understanding of science to explain and interpret phenomena related to their personal health. Teaching about tobacco, alcohol and other drugs is likely to be undertaken in relation to the school's education programme for personal, social and health education.

This unit can be used as part of school commitment to learning outside the classroom manifesto and related learning on local food and drink in the sustainable schools framework, school cooking and growing activities, as well as other curriculum areas e.g. geography.

WHERE THE UNIT FITS IN

Builds on Unit 3A 'Teeth and eating' and Unit 4A 'Moving and growing'

Citizenship unit 'Animals and Us'

Children need:

- to recognise some common food types
- to understand that a balanced diet is important for health.
- to learn where food comes from and how it is produced

Links with Units 2D, 3C and 5C, personal, social and health education and physical education.

VOCABULARY

In this unit children will have opportunities to use:

- words and phrases related to health e.g. balanced diet, side effect
- words related to food types e.g. fats, sugars, starches, protein, nutrition
- Farm words e.g. livestock, crop, herbivore, carnivore, omnivore, silage, hay straw, names of specific fruits and vegetables
- words and phrases related to the heart and circulation e.g. heart beat, pulse, pulse rate, muscle, blood vessel, lung
- expressions for making suggestions using 'if', 'could'.

RESOURCES

- secondary sources e.g. reference books, CD-ROMs, the internet, leaflets about food from supermarkets, health centres and pharmacies, food labels
- timing devices with an appropriate degree of accuracy (seconds not hundredths of seconds), possibly digital pulse meters
- sources of information about drugs e.g. local health education authority
- balloon pump or bicycle pump
- video/other secondary sources illustrating the function of the heart
- spreadsheet, graphing and DTP software
- HGCA 'Energy Balance' pack
- Soil Association 'Food for life' pack
- FACE www.face-online.org.uk (Healthy Living area)
- Natural England 'Countryside Code' education pack.
www.naturalengland.org.uk
- 5 A DAY website www.5aday.nhs.uk
- Food Standards Agency Eatwell website
www.eatwell.org.uk/healthydiet/eatwellplate/

EXPECTATIONS**at the end of this unit**

most children will:

Learn about where their food comes from and understand in simple ways how it is produced. Understand the importance of a healthy diet and be able to identify the components of a healthy and varied diet. Describe how an idea about the effect of diet on health was tested; recognise some harmful effects of drugs; recognise that during exercise the heart beats faster to take blood more rapidly to the muscles; make careful measurements of pulse rate, represent these in suitable graphs and explain what the graphs show.

some children will not have made so much progress and will:

Learn about where their food comes from and something about how it is produced. Identify some foods needed for a healthy and varied diet and some harmful effects of drugs; recognise that pulse rate is a measure of how fast the heart is beating and make measurements of pulse rate.

some children will have progressed further and will also:

Explain some early evidence for the effect of diet on health; explain why repeated measurements of pulse rate should be made and why it is important to test the effects of exercise on the pulse rate of several people. Be able to name components of a balanced diet and relate this to food they have seen growing. They will understand in some detail how some foods are grown or produced.

LEARNING OBJECTIVES	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE
<p>CHILDREN SHOULD LEARN</p> <ul style="list-style-type: none"> • how a scientific idea can be tested and the evidence used to support the idea 	<ul style="list-style-type: none"> ◆ Tell children a story about inadequate diets e.g. sailors developing scurvy, babies from well-off families in eighteenth century Paris surviving less well than babies from poorer families and explain how this puzzled doctors at the time and how they thought of explanations and tested them. 	<p>CHILDREN</p> <ul style="list-style-type: none"> • describe how an imaginative idea about the relationship of diet to health was tested 	<p>Sailors' diets were deficient in vitamin C. Although doctors did not know about vitamins it was suggested that the lack of fresh fruit and vegetables was the cause of the problem. This idea was tested by giving some sailors limes.</p> <p>Doctors in Paris found that babies from well-off families were surviving less well than babies from poorer families. They suggested this was because their diet consisted of bread and butter and boiled milk, whereas the poorer babies were fed potatoes and gravy, which contained some vitamin C. When doctors suggested diets containing cooked potato, lemon juice or fresh milk, the survival rate improved.</p>



LEARNING OBJECTIVES	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE
CHILDREN SHOULD LEARN		CHILDREN	
<ul style="list-style-type: none"> • that to stay healthy we need an adequate and varied diet • to present information about diet and health and introduce the 5 A DAY concept and the <i>Eatwell Plate</i> • where food comes from and how it is produced • that fresh fruits and vegetables are important to diet and the place of other food types in a healthy diet. 	<ul style="list-style-type: none"> ◆ Help children to use secondary sources e.g. reference books, CD-ROMs, leaflets from supermarkets, health centres and pharmacies to find out about foods which are rich in fats/oils, those which are rich in sugars/starch and those which provide materials needed for growth. BNF resources for 8-11 year olds <i>Food: a fact of life</i> might be useful. ◆ On the farm visit relate the plants and livestock they see to the food they eat. Discuss with children why fruit and vegetables are also important for a healthy diet and possible effects of too much fat and sugar. Ask the children which fruits and vegetables they like/dislike. Explain that sometimes we have to get used to some foods because we may have developed a sweet tooth or a need for salt to discover flavour, but that fresh foods often have subtle but delicious flavours of their own. Using the farm, show them some fruits and vegetables and other crops e.g. wheat, potatoes. If possible have opportunity to harvest some crops e.g. vegetables, fruits and/or sow some seeds. The farmer may be able to give seeds to sow back at school if this is not possible on the visit. Take opportunities to discuss, along with the farmer's help, how wheat becomes bread, potatoes become chips etc. What does the farmer do to help keep crops healthy? ◆ Help children to produce a display illustrating adequate and varied diets or a week's menus which provide a varied and balanced diet. 	<ul style="list-style-type: none"> • identify some foods e.g. by including them in their display or menu foods e.g. meat, fish, eggs, cheese needed for growth and those which provide for activity e.g. sugar, bread, pasta, rice, fats etc • can describe some of the foods that are produced from farms that are particularly important as part of a balanced diet • identify some foods e.g. by including them in their display or menu which contain large amounts of fat e.g. crisps, chips and some which contain large amounts of sugars e.g. sweets, jam and state that they shouldn't eat too much of these • identify fruit and vegetables and other crop plants e.g. by including them in their display or menu as essential components of a healthy diet 	<p>At this stage children do not need to be able to classify foods formally into groups such as protein or carbohydrate. However, they should know that some foods e.g. fish, meat, cheese and some vegetables provide materials necessary for healthy growth while other foods e.g. starches and sugars are more immediate sources of energy for activity, and that fruit and vegetables provide other essentials e.g. fibre. Most children should be able to understand that energy foods are of two types – carbohydrates (starches and sugars) and fats. Many children will have heard of protein, carbohydrate, etc, so there may be good opportunity to build on this knowledge</p> <p>This activity could provide an opportunity to construct or use an ICT database relating to food types.</p> <p>This activity links to work on information retrieval and reinforces work on using explanatory and non-chronological texts. This is included in the National Literacy Strategy Framework for teaching for year 5.</p> <p>There are other food chain activities available: <i>Food for Life</i> by the Soil Association has an activity looking at a meal like spaghetti bolognese and tracing where the elements of the meal come from. The FACE web site has a downloadable resource 'Choosing our Food' in their Healthy Living section.</p>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<ul style="list-style-type: none"> • that we need exercise to stay healthy and to maintain our muscles • that when we exercise, our muscles work harder • that modern work styles often mean less exercise for our bodies. • That a balanced diet is essential for good health 	<ul style="list-style-type: none"> ◆ Describe and explain in terms of the muscles working what happens during and after playing games or doing other strenuous exercise e.g. we breathe faster, feel hotter, feel tired and what happens after a short rest. ◆ On the farm visit discuss with the farmer what activities people come to the countryside to take part in that keep them healthy exercise. What physical activities does the farmer do in his work? e.g. walking when checking stock, lifting, moving small bales. How has the physical work changed on farms over the years? 	<ul style="list-style-type: none"> • explain after exercise we feel e.g. hotter, tired because our muscles have worked harder • have knowledge of outdoor activities available to them when visiting the countryside • understand that physical activity is important in keeping healthy 	<p>Lungs and breathing are not part of the programme of study at key stage 2. However, some children will know that exercise has an effect on pulse rate and on the rate at which they breathe, because of the need for more oxygen to be carried to the exercising muscles.</p> <p>The Countryside Code Education pack has outdoor and classroom activities. It contains a DVD explaining the physical activities young people can enjoy in the countryside. Available from www.naturalengland.org.uk</p>

- that the heart and lungs are protected by the ribs
 - that the muscle in the walls of the heart contracts regularly, pumping blood around the body
 - that blood vessels carry blood around the body
 - that animal health and nutrition is similar to humans in some ways and different in others.
 - farmers can control animal diet to keep animals healthy; we must control our diets likewise.
- ◆ Using models or other secondary sources, locate the heart and lungs within the rib cage. Show children a model of a heart to show size, vessels and thickness of the walls. Using secondary sources e.g. video, CD-ROM explain that the muscle in the walls of the heart contracts regularly, pumping blood around the body. Demonstrate a pump e.g. a balloon pump and emphasise it is used to push air into the balloon. Using models or video demonstrate to children that the heart pumps the blood to all parts of the body where it is needed e.g. muscles, brain, lungs.
 - ◆ Looking at an animal, e.g. cow ask the farmer to discuss the organs inside the animal and how nutrition and diet are important in keeping the animal healthy. Relate this concept back to how we keep healthy. Look at feed the farmer may use and ask him to explain what is in it. Relate the elements in the feed e.g. protein from Soya to for us protein from meat. A question and answer session with the farmer to engage children with the idea of energy inputs and outputs. What would happen to the animal if it were fed too much? How much do they eat in a day? (a lot!) Why is the diet of the animal different to ours?
- locate the heart e.g. in a model 3D representation of the body and describe how the ribs protect it
 - recognise that the heart is a pump because its muscle wall keeps contracting and squeezes the blood in it forcing blood to move around the body
 - describe e.g. through making annotated drawings that the heart pumps blood round the body and identify some parts of the body e.g. lungs, brains, muscles through which blood flows
 - describe the sort of foods that some animals need to keep healthy and how this is similar or different to human diet.
 - understand that as children grow up, they have responsibility to themselves to eat a balanced diet.

Children sometimes think that blood only reaches some parts of the body.

At this stage it is not necessary to discuss the detailed structure of the heart, e.g. the structure and function of valves or of the blood e.g. cells or that there are different types of blood vessel.

Teachers may wish to discuss the role of the blood in transferring oxygen from the lungs to muscles and other parts of the body. However, this is not a requirement of the key stage 2 programme of study.

The HGCA (Home Grown Cereal Authority) has pupil and teacher areas. Online activities, including quizzes are provided considering dietary energy inputs and outputs as well as areas exploring food nutrients and food groups as well as food production at www.grainchain.com

British Nutrition Foundation; *Food a Fact of Life* has activities and lesson plans, teacher resources. www.foodafactoflife.org.uk

It would be good to explore the fact the farmer can control what the animals eat and therefore keep their diet very good. However, for humans, there is individual choice and sometimes these choices lead to a poorly balanced diet.

There is opportunity to discuss concepts of herbivores, carnivores. Make opportunity to talk about food chains in nature on the farm e.g. fox as a common carnivore and its diet being different to e.g. sheep.

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<ul style="list-style-type: none"> • how to measure their pulse rate and relate it to heart beat • to repeat measurements of pulse rate • to represent data about resting pulse rate in a bar chart and to say what this shows 	<ul style="list-style-type: none"> ◆ Ask children about the relationship between heart beat and pulse. Explain to children that pulse rate is measured as beats per unit time (minute). Show children how to measure resting pulse rate and ask them to take and record their own several times. Ask children to suggest why they didn't get the same result each time and why it is important to make several measurements. Ask them to contribute the result they think is most accurate to a class record of resting pulse rate. Help children to convert this into a bar chart where data is grouped. Ask children questions about the bar chart e.g. <ul style="list-style-type: none"> – Which was the most common range for pulse rate? – What were the highest and lowest pulse rates? – Were these very common? 	<ul style="list-style-type: none"> • describe the connection between pulse rate and heart beat e.g. the pulse rate tells you how many times the heart beats in a minute • measure their resting pulse rate several times obtaining reasonably consistent results • with help, represent data about pulse rate in a bar chart and interpret what this shows 	<p>Children may focus on other effects of exercise e.g. feeling hotter. Teachers may need to re-direct their attention to the connection between exercise and increased pulse rate.</p> <p>A graphing program or spreadsheet could be used to construct a bar chart.</p>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<ul style="list-style-type: none"> to identify factors which could affect pulse rate and make predictions about the changes to plan what evidence to collect including the number of measurements of pulse rate to take and the number of children to use to present results in a line graph and explain what these show and whether they support the prediction 	<ul style="list-style-type: none"> Ask children to speculate about factors which could change the pulse rate e.g. exercise and to make a prediction e.g. if I run for two minutes it will increase my pulse rate, if I run for three minutes it will increase more and take longer to get back to normal and to investigate the relationship between exercise and pulse rate. Discuss with children what sort of exercise they think raises pulse rate most and why it is important to investigate the effect on several children, not just one. Use some open space on the farm for children to do different forms of exercise; some could jog round a field, others could take a brisk 5 minute walk on part of a public footpath, others could dig up potatoes, harvest some vegetables or move manageable objects e.g. half bales, weed a raised bed with hand tools for a certain time. Children could record pulses before and after the form of farm activity. After children have carried out their investigation help them to represent their data as a line graph. Data could be collated on farm or back at school. Talk with children about what their graph shows and, if possible, show them other graphs or data relating to changes in pulse rate and ask them to interpret these. Ask children to think of additional questions e.g. would we have got the same results if we'd used adults instead of children? boys as well as girls? and to review their conclusions in the light of these questions. 	<ul style="list-style-type: none"> plan an investigation to test the prediction make suitable measurements of pulse rate e.g. by carrying out the process on several children construct a line graph to show the effects of exercise on pulse rate e.g. pulse rate before and at intervals after exercise or pulse rate before and after exercise of different duration and describe what these show explain how exercise affects the heart beat in terms of the exercising muscles needing a better supply of blood describe some limitations of their work, e.g. I only tested girls, I think it would be the same for everybody but I don't really know 	<p>This activity offers children the opportunity to carry out a whole investigation. It may be helpful to concentrate on the aspects of investigation highlighted in the learning objectives. Children could be asked to interpret line graphs showing changes in pulse rate during and after exercise.</p> <p>SAFETY – Children should undertake usual PE activities, not attempt to 'test' their stamina or strength. Careful supervision is needed to ensure this.</p> <p>Children could follow a designated trail with a curriculum focus, e.g. maths or literacy or trail with elements of orienteering and take pulse measurements at various points on the route.</p> <p>SAFETY - Children should be supervised and not sent off on the farm alone.</p>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<ul style="list-style-type: none"> • that when humans exercise, muscles move parts of the skeleton and this activity requires an increased blood supply, so the heart beat increases and the pulse rate is faster • where muscles are in animals and humans and how exercise keeps it healthy. 	<ul style="list-style-type: none"> ◆ Discuss with children which muscles they move when they exercise e.g. running, jogging, and swimming and relate this to how muscles move their skeletons. Review previous work on skeleton, muscles and exercise by asking children to produce an information leaflet about a form of exercise. Looking at the animals on the farm get the children to think about the body shape and where muscles are in animals of these animals. Discuss and ask questions considering which part of the animal would have the toughest meat, which the leanest. Ask the farmer to explain something about how different 'cuts' of meat on beef cattle or lamb are related to the exercise that muscle in the animal receives. Which muscles in our bodies do least/most exercise? 	<ul style="list-style-type: none"> • identify in their leaflet the parts of the skeleton that move and which parts of the body need an improved blood supply e.g. when you swim you move your arms, shoulders and legs and the heart pumps faster to increase the supply to the muscles in these parts of the body 	<p>Diagrams showing cuts of meat are available via www.beefandlamb.co.uk and has nutritional information about meat and balanced diets.</p> <p>The farmer may be able to get charts showing these muscles in animals.</p>
<ul style="list-style-type: none"> • that substances like tobacco, alcohol and other drugs can affect the way the body functions and these effects can be harmful • that medicines are also drugs and also affect the way the body functions but the effects are usually beneficial though there may be side effects • that medicines can be harmful if they are not taken according to instructions 	<ul style="list-style-type: none"> ◆ Review what children know and understand from the previous key stage unit 'Health and growth' (Unit 2A). Explain the definition of a drug as any substance which changes our physical or mental state and talk with children about possible side effects. Encourage children to think about why we take medicines even though there may be unpleasant side effects. Use secondary sources e.g. video, CD-ROM, leaflets to illustrate effects of tobacco, alcohol or other drugs. Ask children to make posters to inform other children of the effects of drugs, alcohol and tobacco. 	<ul style="list-style-type: none"> • include in their poster appropriate information about the effects of drugs, tobacco or alcohol 	<p>Teachers will be aware of the need to be sensitive to individual children and to the circumstances of their families in relation to this area of work.</p> <p>A DTP program could be used to produce the poster.</p> <p>SAFETY – Tar is carcinogenic. Demonstrations of 'smoking machines' which produce tar are not suitable for most primary classrooms.</p>