



SS John Fisher & Thomas More Catholic Primary School

A Voluntary Academy



Year Group: Year 3 & Year 4	Term: Autumn 1 (Cycle A)	Topic: The Musculoskeletal System and Nutrition
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National Curriculum Links

Pupils in Key Stage Two should be taught to:

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement

Working Scientifically

- ask relevant questions and using different types of scientific enquiries to answer them
- set up simple practical enquiries, comparative and fair tests
- make systematic and careful observations and, where appropriate, taking accurate measurements using standard units and a range of equipment
- gather, record, classify and present data in a variety of ways to help in answering questions
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identify differences, similarities or changes related to simple scientific ideas and processes
- use straightforward scientific evidence to answer questions or to support their findings.

Prior Learning	Future Learning
<ul style="list-style-type: none"> • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals, including humans) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) • Describe and compare the structure of a variety of common animals (Y1 - Animals, including humans) • Find out about and describe the basic needs of animals, including humans, for survival (Y2 - Animals, including humans) 	<ul style="list-style-type: none"> • Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans) • Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans) • Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans) • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (Y6 - Animals, including humans)

- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)

Common Misconceptions

Some children may think:

- **certain whole food groups like fats are 'bad' for you**
- **certain specific foods, like cheese are also 'bad' for you**
- **diet and fruit drinks are 'good' for you**
- snakes are similar to worms, so they must also be invertebrates
- invertebrates have no form of skeleton.

Sustainable Development Goals & Catholic Social Teaching

These Sustainable Development Global Goals would be perfect to fit with this unit of learning:



These Catholic Social Teaching strands would be perfect to fit with this unit of learning:

Applied Write Opportunities

- A leaflet about healthy diets
- A poster about healthy eating

Enrichment Opportunities

- A visit from a dietitian.
- Visit a food outlet and watch them make food.

Assessment Opportunities

- Can classify food into those that are high or low in particular nutrients
- Can answer their questions about nutrients in food, based on their gathered evidence
- **Can talk about the nutrient content of their daily plan • Use their data to look for patterns (or lack of them) when answering** their enquiry question
- Can give similarities e.g. they all have joints to help the animal move, and differences between skeletons

Key Vocabulary

Tier Two:

skeleton, bones, muscle, heart, lungs, brain, skull, jaw, ribs, hip, leg, arm, neck, foot, toe, hand, shoulder/shoulder blade, breast bone, calf, knee cap, wrist, forearm, ankle, spine, backbone, elbow, thigh, shin, joints, organs, face, torso, energy, relax, diet, fat, sugar, salt, dairy, fruit, vegetables, meat, fish

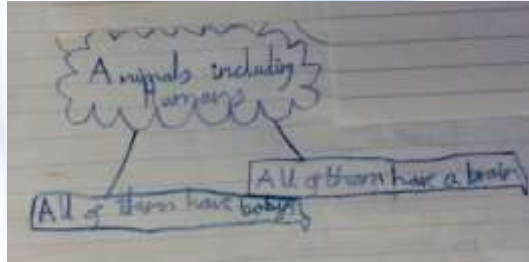
Tier Three:

pelvis, cranium, sternum, vertebrae, humorous, metatarsals, reproductive organs, tendons, musculoskeletal, voluntary, involuntary, contracts, facial, biceps, triceps, quadriceps, hamstrings, abdominals. Deltoids, pectorals, gluteus maximus, vertebrate, endoskeleton, invertebrate, exoskeleton, hydrostatic skeleton, herbivore, carnivore, omnivore, protein, carbohydrates, starches, nutrition, nutrients,

Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson One</u></p> <p>I can compare the characteristics of animals.</p> <p><u>Working Scientifically:</u></p>	<p><u>Starter Question:</u> Ask the children; <i>Which is the odd one out and why?</i> Discuss with Talking Partners before discussing as a whole class.</p> <p><u>Introduction:</u> Following the presentation of the images and discussion, children to be asked to think about what the animals all have in common, and whether they also have this in common with humans.</p>	<p><u>SEND:</u></p> <p><u>Year 3:</u> Sorting images and facts Take photographs of each group's findings</p> <p><u>Year 4:</u> Sorting images and facts</p>

Activity 1:

Children to create a mind map of their thinking (words and images). Spend time listening to the children talk about what they already know.



Activity 2:

Next, ask the children to think about the differences between animals, including humans. Children to discuss these ideas with their Talking Partner.

Discuss with the children how animals differ e.g. some have tails, some have no legs, some have beaks – Can they recall from KS1 the different animal groups (amphibians, reptiles, mammals, fish, birds & insects). Record what the children know on the board.

Then, give out some animal cards to groups of children. Ask the children to sort them according to their characteristics. Listen carefully to the group's discussion, and especially for any misconceptions.

Following this, give out fact cards about each animal group for the children to sort and add to the images.

Take photographs of each group's findings

Challenge:

Children to read more about the animal groups and their characteristics.


Use text book:

Plenary

Consolidate the similarities between animals, and then the differences. Discuss the animal groups and some of the additional facts they have learnt through the challenge (if the challenge hasn't been done, read the text to the children and discuss)

Resources

Images of a mouse, worm and snail
Animal sorting cards
Animal fact cards
Text book for additional reading

Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson Two</u> I can explain why a skeleton is important to us.</p> <p><u>Working Scientifically:</u></p>	<p><u>Starter Question:</u> Ask the children; <i>What is inside us?</i> Ask the children in groups to add and label as many body parts as they can to their outline, trying to put them in the correct positions. (Hopefully someone will mention bones and a skeleton or you may need to prompt them). Listen to the group's discussions carefully and use this activity as a pre-assessment of what children already know and any misconceptions.</p> <p><u>Introduction:</u> Ask the children; What is a skeleton? Why do we need bones? What would happen if we didn't have one? Discuss with Talking Partners before discussing as a whole class.</p> <p>Ask the children to hold up their paper outlines and drop them – discuss what happened. Explain our bodies would flop like this if we didn't have a skeleton. We need a skeleton to support us. Our skeleton is made up of 206 different bones (an adult) of all shapes and sizes that join together to make our skeleton. When we are a baby we have about 300 bones. The bones are much softer and need to fuse together.</p> <p>Ask the children, what bones can they feel on their own bodies? Give time for the children to explore their bones. What can they feel? Do the children know any names of their bones? If they do, on a large image of the skeletal system, label what the children know (pre-assessment).</p>	<p><u>SEND:</u> Children to have a skeleton already cut out and only in a few parts (skull, ribs, 2 legs and 2 arms) Children to have pre-made labels to attach. Children to be given sentence starters to support their answers.</p> <p><u>Year 3:</u> Children to have access to a word bank to support their spelling of scientific words. Children to write simple sentences explaining how the body supports us and what it would be like to have no skeleton. Children to answer the questions with some scientific reasoning.</p> <p><u>Year 4:</u> Children to include a more descriptive explanation of how the skeleton</p> 

Resources

Life-size paper outline of a person.
Colouring pens
Large image of a skeleton
Plastic bones
Trays
Sands
Bone matching sheet
Bone vocabulary cards
Large model skeleton
Worksheet of skeleton
Glue
Scissors
Pancake (shape of a person)
Biscuits (shape of a person)

Activity 1

Explain to the children that you have set up an archaeological dig with plastic bones buried in sand. In small groups, they are going to dig up the bones and match them to the human skeleton. Once they have matched the bones, children used the worksheet to name the bones. Listen carefully to the children as they discuss the bones, and their reasoning behind their ideas.

Take photographs of the children doing this task.

Following this activity, use a life-size model of a skeleton, label the bones with **the children. Then play a version of 'Simple Simon' – Simple Simon says, touch your ribs... your skull...**

Children to build a skeleton; children to cut out the bones and put them together to make a human skeleton. Then, children to label the skeleton using a word bank (ribs, spine, pelvis, skull).

Activity 2:

Use a pancake and a hard biscuit to reinforce what our body would be like with and without bones.

Discuss how the bones give us shape. If we had no bones we would be a blob of muscle on the floor. Support is one of the vital jobs of our skeleton.

Give the children 2 questions to discuss in small groups.

- 1) What would it be like if you had no skeleton? Explain.
- 2) Do you think a fabric skeleton would work? Explain



supports us, and what it would be like to have no skeleton.

Children to answer the questions with increasing scientific reasoning.

Challenge:

Children to explore x-rays of skeletons. Can they identify which part of the body the x-ray shows?

Plenary

Consolidate the importance of a skeleton as a support for us.

Play the following video. Invite the children to join in with the video.


<https://www.youtube.com/watch?v=i3CvuCyAsz8>


At the end of the video ask the children; Can you think of another reason why we have a skeleton? (move)

	Discuss these questions as a whole class. Then the children to record their understanding of the role of a skeleton for support into their journals.	
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Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson Three</u> I can explain why a skeleton is important to us and how it works.</p> <p><u>Working Scientifically:</u></p>	<p><u>Starter Question:</u> Ask the children; <i>Why is a skeleton important?</i> Discuss with Talking Partners before discussing as a whole class.</p> <p><u>Introduction:</u> Explain to children that a human skeleton not only supports us and allows the body to move, it protects our vital organs. Ask the children what is meant by 'vital organs'. Show the children images of our vital organs. Ask the children where these might be in our body? Discuss as a whole class. In the life-size skeleton, place representational images or objects of these organs within the skeleton frame.</p> <p><u>Activity 1:</u> Explain to the children that they are going to sort bones that they found during the archaeological dig. Explain that they are going to sort the bones that protect us and those bones that don't. Children to sort them. Take photographs of the children's findings and listen carefully to the children's discussions; discussing any misconceptions.</p> <p>Following the activity, discuss which bones protect;</p> <ul style="list-style-type: none"> • the skull (cranium) protecting our brain. • the ribs protecting our lungs and heart • the vertebrae protects our spinal cord 	<p><u>SEND:</u> Children to have fewer bones to sort. Children to build joints using construction toys.</p> <p><u>Year 3:</u> Children to have major bones to sort along with labels. Children to label the images of joints and sort them according to how they move.</p> <p><u>Year 4:</u> Children to have a range of bones with no labels but a reference vocabulary mat for them to use to find the names of the bones. Children to label the images of joints and sort them according to how they move. Children to research about the joints and write about each joint and how they move.</p>

	<ul style="list-style-type: none"> the pelvis protects the reproductive organs. <p>Get the children to feel for these bones in their body. (Add these labels to the large model skeleton if not already in place.)</p> <p>Watch the following video to consolidate children's knowledge and understanding of the role of the skeleton</p> <p>https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zqfdpbk</p>	<p>Challenge:</p> <p>Children to answer these questions.</p> <p><i>How does the skeleton support the body?</i></p> <p><i>How does the skeleton protect our organs?</i></p> <p><i>How does the skeleton help us to move?</i></p>
<p>Resources</p>	<p>Activity 2:</p> <p>Discuss with the children that our skeleton helps us to move, but how can bones move?</p> <p>Discuss with their talking partner before discussing as a whole class.</p>	
<p>Large human skeleton A dress up costume of a skeleton Bones for sorting Construction toys Worksheet</p>	<p>Explain that where two bones meet it is known as a joint. Bones form joints and act as levers, allowing muscles to pull on them to produce movement. Give time for the children to explore their own joints and the movements our muscles allow us to do. Children to discuss their ideas.</p> <p>Discuss the knee joint; it allows your leg to move forwards and backwards like a hinge in a door. That is why it is called a hinge joint. Look at an image of this hinge joint and use the large life-size skeleton to show this too. Can the children think of any other hinge joints in the body? (elbow, hand, foot and ankle)</p> <p>Explain that bones are held in place of a joint by a strong threads called a ligament,</p> <p>Next, discuss the hip joint; this joint is the most moveable joint in the body as it allows movement in all directions. Look at an image of this ball and socket joint and use the large life-size skeleton to show this too. Can the children think of any other ball and socket joints in the body? (shoulder)</p>	<p>Plenary</p> <p>Consolidate what the children have learnt about the human skeleton.</p> <p>Watch the following video to help them to understand the skeletal system and introduce the muscular system – together making the musculoskeletal system.</p> <p>https://www.youtube.com/watch?v=f3lOYZ7OSFA</p>

	<p>Put on the tables construction toys for children to make a hinge joint and a ball and socket joint. Take photographs of the children making these.</p> <p>Then, using the worksheet below, children to name the different joints in their body.</p>		
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Knowledge and Skills Objectives	Activity	Differentiation
<p>Lesson Four</p> <p>I can explain how my muscles work.</p> <p><u>Working Scientifically:</u></p>	<p>Starter Question: Ask the question; How does our body move? Children to discuss with their Talking Partner before discussing as a whole class.</p> <p>Introduction: Explain to the children that today they are going to learn more about the muscles. Watch the following video to support the learning of muscles in our body. https://www.youtube.com/watch?v=3haTJCOkyxA</p> <p><u>Activity 1:</u> Explain that muscles are attached to bones by tendons (like elastic bands) and help the bones to move. When a muscle contracts (bunches up), it gets shorter and so pulls on the bone it is attached to. When a muscle relaxes, it goes back to its normal size.</p> 	<p><u>SEND:</u> Children to be supported in the making of the muscle model. Children to verbally explain how muscles work. Children could be the time keeper for the activity if they are unable to complete the exercise.</p> <p><u>Year 3:</u> Work in pairs when constructing the arm model. Children to explain how muscles work to another pair of children. Can they explain using some scientific vocabulary?</p> <p><u>Year 4:</u></p>

Plenary

Children to explain to another child how their muscles work.

Challenge:

Research different muscles in the body using Usborne Readers Text.

Play Walk and Talk – the children move around the classroom whilst listening to some music. When the music stops, the children pair up. Then they are given a question to discuss. When the music starts, the children move again. Children have to pair with someone different every time.

Questions to ask:

- How many bones are there in the body?
- How many muscles are there in the body?
- Which bone is the largest bone in the body?
- What are the three jobs of a skeleton?
- Which bone protects the brain?
- Which bones protect the heart?

Muscles can only pull and cannot push. Therefore muscles have to work in pairs to move a joint. One muscle will contract and pull a bone one way and another muscle will contract and pull it the other.

Watch these video to support the understanding of how muscles work.

<https://www.bbc.co.uk/bitesize/clips/zj2kjxs>

<https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zpbxb82>

Children to make a model of the arm muscles contracting and relaxing.

There are two ways of doing this;

- 1) The first one involves cardboard tubes and balloons. The instructions can be found on this website.

Have the resources prepared for the children so the construction of the model

doesn't take too long.

<https://kidsactivitiesblog.com/17436/how-do-muscles-work>

- 2) This is an alternative method.

Take photographs of the children making this model.

On completion of the activity, invite children to explain how our muscles work, and in their journals to write about how muscles work.



Resources

a large human skeleton
rubber bands

toilet rolls

cardboard

sticky tape

balloons


images of voluntary and

involuntary muscles

		Where can the smallest bones in the body be found? How do our muscles work? etc
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Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson Five</u></p> <p>I can name my muscles and explain differences between them.</p> <p><u>Working Scientifically:</u></p>	<p>Starter Question: Ask the children ; How many muscles do I have? What are my muscles called? Children to discuss with their Talking Partner before discussing as a whole class.</p> <p><u>Introduction:</u> Display an image of the skeleton with muscle jigsaw pieces to place over the top. Discuss with the children how many muscles are in our body (over 600 muscles) and the importance of muscles.</p> <p><u>Activity 1:</u> Introduce the muscles one by one to the children; placing the muscle jigsaw pieces on top of the skeleton with a label. Some children may have heard of these muscles through sport and when warming up in PE, and may know the abbreviations e.g. abs, pecks, glutes... Teach them; Face – facial Arms –biceps and triceps Legs - quadriceps and hamstrings Torso – abdominals, deltoids, pectorals, and gluteus maximus (These muscles could be referred to in PE lessons during warm up and cool down activities).</p>	<p><u>SEND:</u> Children to attach pre-labelled muscles onto a skeleton. Children to sort and stick muscles into a Venn diagram.</p> <p><u>Year 3:</u> Children to attach muscles to the skeleton and label them using a word mat to support them. Children to draw a table and list 6 different muscles. Children to explain using simple sentences.</p> <p><u>Year 4:</u> Children to attach muscles to the skeleton and label them using both scientific and everyday words e.g. bottom/Gluteus maximus Children to draw a table and list 8-10 different muscles (building on their knowledge from previous year). Children</p>

	<p>Play 'Simple Simon' type of game using the muscles. Children to use their own jigsaw pieces of the muscles, and stick on top of the skeleton. Children then to label them.</p>	<p>to explain using more detail and increasing scientific language.</p>
<p>Resources</p>	<p><u>Activity 2:</u> In groups, give them activity cards to perform. Children then to perform the task and following it, discuss which muscles they used. Take photographs of the children doing this activity.</p>	<p><u>Challenge:</u> Children to devise a mini workout that exercises all the muscles learnt today.</p>
<p>Image of skeleton Jigsaw muscle pieces Muscle labels Worksheet of skeleton and muscles Activity cards to perform Involuntary and voluntary muscle cards for sorting.</p>	<p><u>Activity 3:</u> Explain to the children that some muscles are voluntary and some muscles are involuntary. Discuss the meaning of these words. Voluntary – we can move them. Involuntary – we can't move them, they work without our control. Display two images of muscles e.g. heart and the upper arm. Children to choose which muscle is voluntary and which is involuntary. Repeat with further examples.</p> <p>Give children picture cards of voluntary and involuntary muscles with labels. Invite the children to sort the images. Listen carefully to the children's discussions, and discuss any misconceptions. Next, ask the children the question; <i>Is a smile voluntary or involuntary?</i> Discuss their thinking.</p> <p>Children to record this understanding into their journals in a table format and record what is meant by voluntary and involuntary.</p>	<p>Plenary</p> <p>Watch this video to consolidate all they know about the musculoskeletal system. https://www.youtube.com/watch?v=ynVRDsDC-84</p> <p>Play 'Simple Simon' game again.</p>

Knowledge and Skills Objectives	Activity	Differentiation
<p>Lesson Six</p> <p>I know skeletons differ between animals.</p> <p><u>Working Scientifically:</u></p>	<p>Starter Question: Ask the children. Do all animals have a skeleton? Discuss with Talking Partners before discussing as a whole class.</p> <p><u>Introduction:</u> Recap that our skeleton is made of bones and bones grow as we grow. Explain that we belong to a group of animals called 'vertebrates'. Explain that these animals have a skeleton inside their body with a spine (backbone) and bones. The animals are said to have an endoskeleton. They include all mammals, birds, reptiles, amphibians and fish. Get the children to think of which animals are mammals, birds, reptiles, amphibians and fish. This will reinforce their Knowledge and understanding from lesson 1. Look back at their learning from Lesson 1.</p> <p><u>Activity 1:</u> Explain to the children that they are going to look at images of animal skeletons. Can they guess which animal it belongs too? Show the children images showing animal skeletons. Children to try and name them. Give all children animal images and skeleton images. Get the children to match them and stick them into their journals. Discuss how they know the skeleton matches the animal.</p> <p><u>Activity 2:</u> Following the first activity, give the children pictures of these skeletons and ask to sort them in different ways. Listen carefully to the children's discussions, and discuss any misconceptions e.g. I didn't know a snake has a skeleton. Once the children have sorted them, invite groups to swap tables and try to figure out how their friends have sorted the animals. Repeat this.</p> 	<p><u>SEND:</u> Match 1 of each animal type. Children to sort fewer skeletons and give verbal explanations. Compare two images and give verbal explanations</p> <p><u>Year 3:</u> Match several animals including one that you wouldn't expect to have an endoskeleton. Children to have several images to sort. Compare two animals and give some detailed comparisons using conjunctions e.g. however, but, also, and with some naming of bones.</p> <p><u>Year 4:</u> Match several animals including an odd one out. Children to have a larger number of skeletons including a few with exoskeletons in the mix to deepen their thinking and reasoning. Compare two animals using more scientific detail e.g. names of bones, position e.g. backwards</p> <p><u>Challenge:</u></p>

<p>Resources</p> <p>Images of animal and their skeletons Animal skeletons to sort and animal skeletons to stick into their book Sorting hoops Animal pictures (pairs)</p>	<p>Take photographs of the children sorting the images.</p> <p><u>Activity 3:</u> Next, show the children two pictures of animal skeletons and in pairs discuss the similarities and differences.</p> <p>Children to write a comparison between the 2 images. Repeat with two more images.</p> 	<p>Read more about endoskeletons. Write three facts about them.</p> <p>Plenary</p> <p>Explain to the children that they have been learning about animals with a skeleton on the inside. Inform them that some animals have a skeleton on the outside or some animals have no skeleton at all. Ask them to think about which animals might have a skeleton on the outside or have no skeleton. Children to make a list of animals. This will form a prediction for the next lesson.</p>
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Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson Seven</u></p> <p>I know skeletons differ between animals.</p> <p><u>Working Scientifically:</u></p>	<p><u>Starter Question:</u> Ask the children. <i>Do all animals have a skeleton?</i> Discuss with Talking Partners before discussing as a whole class.</p> <p><u>Introduction:</u> Consolidate the learning from the previous lesson on endoskeletons. Explain to the children that not all animals have a skeleton on the inside. Some animals have a skeleton on the outside; some have a shell and some have no skeleton at</p>	<p><u>SEND:</u> Children to be given headings and 1 of each to match. Read with them the information. Using feature cards, match to the animal group. Children to sort the first and second questions.</p>

all. These animals are called invertebrate. Those with a skeleton on the outside have an exoskeleton and those with no skeleton have a hydrostatic skeleton.

Activity 1:

Watch the following video to explain what happens to animals with an exoskeleton.

<https://vimeo.com/37438364> Then give the children images of animals get them to sort them according to their characteristics. Take photographs **the children's findings.**



Discuss children's ideas and their reasons for this decision.



Activity 2:

Watch the following video to explore invertebrates in more detail.

<https://www.youtube.com/watch?v=rzxFTrktN1c>

Give the children information cards about the different types of invertebrates. Discuss the features of these animals and what they have found out. Children to list the key features of different invertebrates.

Learning about invertebrates - Soil invertebrates

	Arachnid		Earthworm
	Mollusc		Insect
	Earthworm		Flatworm
Centipede	Myriapod		Mollusc

Activity 3:

Introduce the children to a classification key. Teach the children how to use a

Year 3:

Children to sort animals with headings. Children to write simple features using bullet points. Follow all the questions to complete the classification key.

Year 4:

Children to sort without headings. Children to consider headings and write their own. Children to explain in more detail the features of the animals. Children to complete the missing question on the classification key.

Challenge:

Children to create their own classification key.

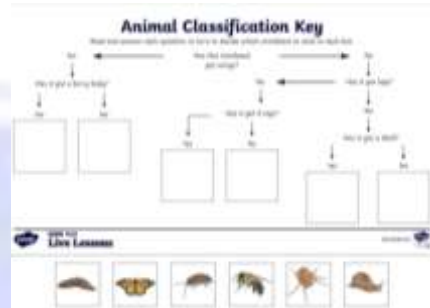
Plenary

Consolidate all learning on skeletons and especially vertebrates and invertebrates. Play What am I? Ask questions and children to answer using yes or no.

Resources

Sorting cards and titles
Worksheets on invertebrates
Classification key worksheets

classification key. Children to follow the instructions on the classification key and solve.



Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson Eight</u> I can investigate ideas about the musculoskeletal system of animals.</p> <p><u>Working Scientifically:</u></p>	<p>Starter Question: Ask the children; <i>Do you think someone with a long femur bone can jump further than someone who has a shorter femur bone?</i> Children to discuss this with their Talking Partner before discussing as a whole class. <i>Why do you think some people have stronger leg muscles than others?</i> Children to discuss this with their Talking Partner before discussing as a whole class.</p> <p><u>Introduction:</u> Explain that now we have learnt a lot about skeletons, we are going to investigate parts of it.</p> <p><u>Activity 1:</u> <i>Do you think someone with a long femur bone can jump further than someone who has a shorter femur bone?</i></p>	<p><u>SEND:</u> Support them in participating in the investigation as a team, and in the recording of results. Support them in the participating in the investigation as a team, and in the recording of results. Make a scatter graph with playdough or on peg boards.</p> <p><u>Year 3:</u> Children to be given some scaffolding when writing their conclusion. Children to have a pre-drawn scatter-graph to support them.</p> <p><u>Year 4:</u></p>

Resources

Femur bone
Rulers
Metre sticks
Chalk
Space (outside or the hall)
Data recording sheets x2
Femur cards for ordering
Scatter-graph worksheets
Investigation vocabulary cards

*home learning data – how many hours of exercise do I do in a week?

Discuss how to investigate this – children to discuss in small groups how they could do this. As a whole class, create a method e.g.

- 1) **Measure everyone's femur. (How are we going to measure? What are we going to use to measure this? How can we ensure we have measured accurately?)**
- 2) **Put the femur size in order. (Who has the longest is 1st, the next longest is 2nd etc...)**
- 3) **Create a space for jumping and ensure everyone starts at the same point. (Discuss fair testing)**
- 4) **Everyone jumps. (How? Two feet together?)**
- 5) **Distance jumped to be recorded.**
- 6) **Compare results**
- 7) **Work out if the question can be answered.**

Name of Jumper	Length of Femur	Order for Length of femur (1 st , 2 nd and so on)	Distance Jumped	Order for Distance Jumped (1 st , 2 nd and so on)

Following this, get the children to predict their ideas about this investigational question. Write this in their journal.

Present the children with a table to record their findings on, and then carry out the investigation. Children to stick this into their journal.

After the investigation, children to use different sized femur cut-outs, and place them in the position they jumped. Invite the children to discuss what they have found out. Children to stick cut-outs into their journal and to write about what they have found out and why.

Activity 2:

Why do you think some people have stronger leg muscles than others? **(The planning for this investigation comes from the following website - <https://slideplayer.com/slide/13077859/>)**

What is your hunch? This hunch is called a prediction! Children to share their ideas before writing this in their journal.

Children to write their conclusion with increasing independence and use of scientific understanding.
Draw own scatter-graph.

Challenge:

Children to devise their own questions to investigation on the body, and consider how they would carry out this.

Plenary

Consolidate the scientific words;
Prediction (hunch)
Method (how we are going to do it)
Data (what we measured)
Results (what we found out)
Conclusion (what we discovered – did we answer our question)

Give children vocabulary cards, and children to put them in order of what scientists do first, second etc..

Discuss why scientists do these.

Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson Nine</u> I know the differences between animal diets and why food is important for us.</p> <p><u>Working Scientifically:</u></p>	<p><u>Starter Question:</u> Ask the question; <i>What makes your muscles bigger?</i> Children to discuss with their Talking Partner before discussing as a whole class.</p> <p><u>Introduction:</u> Explain that when we are born we don't get more muscles, they just get bigger. The more we use them, the bigger and more flexible we can get. If they are not used and suddenly are without them being warmed up, our muscles will get tired and sore. Link this back to last week's learning and investigation.</p> <p>Explain that is also true of other animals too. They need a lot of muscles, just like we do. However, animals have to develop muscles to help them survive. Discuss what 'survive' means and explain that without strong muscles the animals will be at risk to predators.</p> <p><u>Activity 1:</u> Explain to the children that in order to have strong bones and build muscles we need to eat and drink well. Animals have to have a good diet. A diet is the kinds of food that a person or animal eats. Animals have different diets.</p> <p>Ask the children if they can name the three different diets of animals. (They learnt about carnivores, omnivores and herbivores in KS1). Children to discuss with their TP before discussing as a whole class.</p>	<p><u>SEND:</u> Children to sort 2 of each animal. Support them when using an iPad.</p> <p><u>Year 3:</u> Children to sort animals and give verbal explanations to support their ideas. Give children a specific website to use for their research.</p> <p><u>Year 4:</u> Children to sort animals and give a written detailed explanation to support their ideas. Children to search by asking questions into a search engine.</p> <p><u>Challenge:</u> Children to use pages 14-15 to create a simple food chain. This reinforces their understanding of food chains from KS1. For children in Year 4, a food web could be created instead.</p>
<p>Resources</p>	<p>Explain how herbivores have specialised digestive systems, as plant matter is very hard to break down into energy. Herbivores often graze for long periods throughout the day, so that they can get as much energy as possible. By looking at the shape of the jaws and teeth of animals you can often see if they are</p>	<p>Plenary</p>
<p>animal figures matching cards for sorting ipads</p>		

Book; Who Eats who?

carnivores, herbivores or omnivores. Animals use a range of techniques to obtain their food and then eat it. Some animals have special skills or body parts to allow them to catch and eat their food. Ask the children if they think of different adaptations that animals have to eat their food.

Children to watch the following video to support their understanding of animal diets.

<https://www.bbc.co.uk/bitesize/clips/zxrmp39>

Following this, children to sing, The Animal Diet song (to the tune of The farmer wants a child).

'A carnivore eats meat,

A carnivore eats meat,
Roar, roar, roar and ROAR,
A carnivore eats meat.

A herbivore eats plants,
A herbivore eats plants,
munch, munch, munch and MUNCH,
A herbivore eats plants.

A omnivore eats both,
A omnivore eats both,
roar, munch, roar and MUNCH,

A omnivore eats both'.

Display images of animals and discuss which diet they like and how they know this (links to the teeth unit). Children to discuss with their Talking Partner before discussing as a whole class.

Give each small group a set of animal cards and get the children to sort them according to their diet. Include some challenging animals e.g spiders, bird.

Ask the children;

Why is food important?

What is your favourite food?

Children to share ideas.

	<p>Listen carefully to the group's discussions, and make note of any misconceptions. Take photographs of the group's findings.</p> <p>Take feedback from each group, and allow discussions about the more challenging animals to take place.</p> <p>Give the children ipads to check their thinking. In their journal, children to match animals to their food.</p> <p><u>Activity 2:</u> Consolidate children's knowledge and understanding of food chains, and who eats who. Give out copies of the text, Who Eats Who? This book is on Oxford Owl. Children to share this text with their Talking Partner.</p>  <p>Following the reading of this text, discuss what would happen if something is missing in a food chain.</p> <p>Ask the children if we are missing something, what might happen to us? (weaker muscles and bones).</p>	
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Knowledge and Skills Objectives	Activity	Differentiation
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Lesson Ten

I know what foods humans need to eat to be healthy.

Working Scientifically:

Resources

A range of food items or sorting cards
Sorting hoops
Odd one out strips

Starter Questions:

Ask the question;

Why do we need to eat food?

Children to discuss with their TP before discussing as a whole class.

Consolidate from the previous lesson that in order to grow strong bones and muscles, we need to eat and drink well.

Introduction:

Explain to the children that we need to eat to get the nutrition we need to move and to grow. Plants can make their own food by changing sunlight into sugars but humans and other animals have to eat to get the energy they need. Therefore we need to eat lots of different types of foods to keep our bodies healthy.

Activity 1:

Ask the children to draw or write down what they ate for breakfast that morning or for their meal the evening before. Discuss if they know what food groups the different foods they ate belong to and whether they think it was a healthy meal and why?

Activity 2:

Introduce the children to the 5 main food groups; dairy (protein), fruit and vegetables, starches (carbohydrates), meat and fish (protein), fats and sugars and explain what each one is.

Give the children images or food items and get them to sort them into groups, such as, sausages, chicken and burgers could be put together and labelled as **'meat'**.

(Children would have studied healthy and unhealthy foods in KS1 so should have some understanding of food groups and what is good for us).

Activity3:

Explain to the children that animals (including humans) need a balanced diet. A balanced diet supplies the nutrients your body needs to work effectively. Without

SEND:

Children to have fewer cards to sort.
Children to circle the odd one out and verbally to suggest reasons for this.

Year 3:

Children to sort a range of foods with labels.
Children to circle and suggest a reason for being the odd one out.

Year 4:

Children to sort a range of food and create own headings for them.
Children to circle and suggest multiple reasons for being the odd one out.

Challenge:

Children to research the diets of people with specific dietary requirement e.g. dairy intolerance, vegetarian.

Children to make a list of foods these people can eat.

Plenary

Discuss what is meant by vegetarian, vegan, or lacto-intolerance. If any of the children in the class have a specific

	<p>balanced nutrition, your body is more prone to disease, infection, fatigue, and low performance. Children who don't get enough healthy foods may face growth and developmental problems, poor academic performance, and frequent infections.</p> <p>Ask the children; <i>What is a balanced diet?</i> <i>What food should we be eating?</i> <i>What food should we not eat or not eat a lot of it?</i></p> <p>Children to discuss with the TP before discussing as a whole class. Record children's ideas and reasons for future reference.</p> <p>Watch the following video to support the children's understanding of balanced diets. https://www.bbc.co.uk/bitesize/topics/zrffr82/articles/zppv4j</p> <p>Show the children three images of food. Children to discuss which food item they though were the odd one out and why.</p> <p>In their journals, children to stick in strips of three foods and write about which they believe is the odd one out and why.</p>	<p>allergy, such as, nuts, ask the children to share their own experiences of what having this allergy/tolerance means to them and what they have to do differently to everyone else who doesn't has the allergy/tolerance.</p>
Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson 10</u> I know what the right types and amount of nutrition I need to be healthy.</p> <p><u>Working Scientifically</u> I can ask relevant questions and begin to use different</p>	<p><u>Hook:</u> a range of food packaging</p> <p><u>Starter Question</u> Ask the children; <i>How do I know which of these cereals is healthier for me?</i></p> <p>Children to discuss with their Talking Partner before discussing as a whole class.</p> <p><u>Introduction:</u></p>	<p><u>Task 1</u></p> <p>Food packaging <u>SEN:</u> Ask them to look for a food high in fat, a food high in sugar and a food that is very good for us (all or mostly green) <u>Year 3:</u> Children will not understand percentages and their knowledge of</p>

types of scientific enquiries to answer them.

I can make careful observations.

I can record findings using simple scientific language, drawings and labelled diagrams

I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

Explain to the children that to help us, many food manufactures have to inform us of what is in our food.

Display an example of a food label showing the energy, portion size, fat, saturates, sugar and salt. Discuss why this information is important to know; we **need to eat less fat, sugar and salt as these are not good for our body's health.** Discuss the colour coding on the labels.

Show the children the nutritional information on the packaging of the cereal. Get them to explore what information they can see and what this. Go back to the original question; which cereal is healthier for me, and discuss.



Each grilled burger (94g) contains

Energy 924kJ 220kcal	Fat 13g	Saturates 5.5g	Sugars 0.8g	Salt 0.7g
11%	19%	10%	<1%	12%

of an adult's reference intake
Typical values (as sold) per 100g: Energy 966kJ / 230kcal

Task 1:

Children to look at a range of different labels and discuss with their Talking Partner whether the food is good for us or whether we should have a little of it. **Listen carefully to the children's discussions, and discuss any misconceptions.** Take photographs of children exploring packaging.

Task 2:

Introduce the children to the food pyramid. Children to discuss what they notice about the image with their Talking Partner before discussing as a whole class what each segment or layer informs us.

Children to be given food items and place them on a large food pyramid. Discuss their ideas or any foods that are confusing to place due to multiple ingredients e.g. pizza.



weight might be limiting. Ensure this is explored as part of the lesson so that they understand why something is green, yellow or red.

Children to find a food high in fat, high in sugar, a food low in all areas and a food that is high in most areas.

Year 4: Children will have some knowledge of weight and maybe of percentages. With Year 4 talk about the daily consumption of fats and sugars, to support the understanding of why something is green, yellow or red. To make this activity more challenging; children can have just the labels and match them to an image of the food.

Task 2

Making a food pyramid

SEN: Give 1 or 2 foods from each food group to place onto the pyramid

Year 3: Give them 3 or 4 foods from each food group to place onto the pyramid.

Year 4: Give them a few extra images that present a bit more of a challenge e.g. pizza,

Challenge:

Children to look at a selection of menus and consider which menu is balanced.

<p>Labels Different cereal packets Images of the food pyramid Large food pyramid and food items Cut and stick food pyramid</p>	<p>Give children their own food pyramid and images. Children to stick them or write them on the correct part of the plate or the pyramid.</p> 	<p>Plenary</p> <p>Play corners. Hold up a food item and children to move to the correct food group.</p> <p>Consolidate what they have learnt about food so far.</p>
<p>Knowledge and Skills Objectives</p>	<p>Activity</p>	<p>Differentiation</p>
<p><u>Lesson 11</u> I can explain why some foods are good for me.</p> <p><u>Working Scientifically</u> I can ask relevant questions and using different types of scientific enquiries to answer them</p> <p>I can set up simple practical enquiries.</p>	<p><u>Hook:</u> Food packaging, foods, plates, knives, forks, spoons, craft materials</p> <p><u>Starter Question:</u> Ask the children; <i>How will I know if a food is good for me or not?</i> <i>How do I know if I am eating too much or too little?</i> Children to discuss this with their Talking Partner before discussing as a whole class.</p> <p><u>Introduction:</u></p>	<p><u>Task 1</u></p> <p>Reading fact cards All children to work in mixed ability pairs.</p> <p><u>Task 2</u></p> <p>Using the McDonalds counter app <u>SEN:</u> Guide them in the use of the app and discuss verbally what they found out. Children could add a colour to show the amount of sugar, fat, salt etc.</p>

I can make systematic and careful observations and, where appropriate, taking accurate measurements using standard units and a range of equipment.

I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

I can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

I can use straightforward scientific evidence to answer questions or to support their findings.

Resources

Fact cards
I pads

Explain to the children that they are going to find out more about food. Consolidate what the children learnt about food groups in the previous lesson, and how much of these foods we should be eating.

Task 1:

Place around the classroom fact cards about the different food groups. Children to rotate around them, sharing what they have found out with their Talking Partners.

Invite children to share information they have found out e.g. We need to eat 5 portions of fruit or vegetables a day.

Task 2:

Talk about what might happen to our bodies if we consume too much energy or too much salt, sugar, and fat. However, reassure the children that we can still have a little bit of those foods but not often.

Discuss with the children about calories:

A calorie is a unit of measurement.

A calorie is a unit of energy. When you hear something contains 100 calories, it's a way of describing how much energy your body could get from eating or drinking it.

Are Calories Bad for You?

Calories aren't bad for you. Your body needs calories for energy. But eating too many calories — and not burning enough of them off through activity — can lead to weight gain.

Most foods and drinks contain calories.

lettuce

(1 cup has less than 10 calories)

peanuts

(½ cup has over 400 calories)

Some people watch their calories if they are trying to lose weight. Most kids don't need to do this, but all kids can benefit from eating a healthy, balanced diet that includes the right number of calories — not too many, not too few. But how do you know how many calories you need?

Year 3: Children to work with their Talking Partner. Children to draw and make a simple label for the food through colour coding the amounts.

Year 4: The children could add additional information to their label e.g weight or percentage

Task 3

Measuring fats and sugars

All children to work in mixed ability groups.

Challenge

Children to draw their own balanced meal based on what they have learnt.

Plenary

Consolidate all learning on what foods helps us to grow, stay strong and build good muscles.

Consolidate the reasons for a balanced diet, and what might happen to our

<p>Pre-made labels for children to complete</p> <p>Foods</p> <p>Fat</p> <p>Sugar</p> <p>Plastic cups</p> <p>Teaspoons</p> <p>Sheet of recording</p>	<p>How Many Calories Do Kids Need?</p> <p>Kids come in all sizes and each person's body burns energy (calories) at different rates, so there isn't one perfect number of calories that every kid should eat. But there is a recommended range for most kids between 6 and 12 years old: 1,600 to 2,200 per day, depending on how active they are.</p> <p>Introduce the children to the McDonalds Counter, and how to use it to find out the nutrition in their foods.</p> <p>Children to select a meal an adult might eat and discuss what they have found out about it. Discuss whether this amount would be a green, yellow or red, and why. Can they find a healthier alternative? Why is this meal healthier? Children to record their findings in their journal.</p> <p><u>Task 3:</u></p> <p>Following on from that activity, explain that we are going to look at what fats and sugars are in our foods. Explain what is a recommended daily amount of sugar and fat is for children and adults. Then give the children a list of foods (full-fat coke, biscuit, McDonald's chips, crisps etc.) and get the children to predict how many teaspoons of fat or sugar are in them.</p> <p>Children to work in small groups; place sugar or fat for the children to measure out. Go through each food and inform the groups of how much sugar or fat is in the product. Children to measure it out. Discuss if this amount is within the daily amount or not. Discuss why eating too much of a food will not be good for us e.g. a chocolate chip cookie has 2 Tsp of sugar. If we have 3 biscuits we would have eaten our recommended daily amount.</p> <p>Take photographs of the children measuring.</p> <p>In their journal, children to place their prediction and their findings. Children to write about a food that surprised them and why.</p>	<p>bodies if we don't provide it with the right balance of nutrients.</p> <p>To support healthy living as a whole, watch this video https://www.bbc.co.uk/bitesize/topics/zrffr82/articles/ztsqfcw</p>
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Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson 12</u> I can make healthy choices.</p> <p><u>Working scientifically</u></p>	<p><u>Hook:</u> packed lunch items, plates, knives, forks, spoons, bowls,</p> <p><u>Starter Question:</u> Ask the children; <i>What is a balanced meal?</i> Children to discuss this with their Talking Partner before discussing as a whole class.</p> <p><u>Introduction</u> Explain to the children that today they are going to make a healthy sandwich. Go 'shopping' with the children. Ask the children; Which bread would be good for our lunch? Which filling would be good for our lunch? Which snack would be good for our lunch too?</p> <p><u>Task 1:</u> Children to rotate around activities in this lesson:</p> <ol style="list-style-type: none"> 1) Make their sandwich (teacher led) 2) Draw and annotate their healthy lunch and give reasons for their choices (put into journal along with photograph) 3) Research about vitamins, calcium etc. and why these are good for us. 4) Enjoy reading some science books on food, bones and muscles. <p>Take photographs of the children's sandwiches.</p>	<p>All children to rotate around activities</p> <p>When all the children have made their sandwiches, children can eat them.</p>
<p>Resources</p> <p>A range of sandwich breads and fillings including lettuce, tomato, cucumber and carrot Design sheets I pads</p>		<p>Plenary</p> <p>Discuss what vitamins, calcium etc. are and why some foods advertise that they are high in these. Why is eating or drinking something high in vitamin C</p>

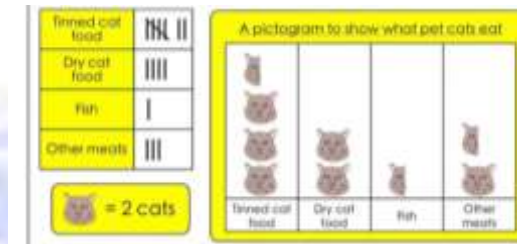
Text books		good for us or why is calcium good for me.
Knowledge and Skills Objectives	Activity	Differentiation
<p><u>Lesson 13</u> I can make healthy choices for my pet.</p> <p><u>Working scientifically</u></p>	<p><u>Hook:</u> pets and pet food</p> <p><u>Starter Question:</u> Ask the children; <i>Do animals eat the same food?</i> Children to discuss with their Talking Partner before discussing as a whole class.</p> <p><u>Introduction:</u> Explain to the children that animals need to eat to get nutrients just like we do. However, animals cannot go to supermarkets to get their food. So where do they get their food from?</p> <p><u>Task 1:</u> Look at pictures of animals and discuss where they get their food from. This links to the lesson on animal diets. Next ask the children if they have any pets and what they like to eat. Make a list of the pets and the foods they eat. Choose two children who have the same pet, and ask the question; Do your pets like the same food? Through this discussion, illicit that there are different types of animal foods and that the same pets can actually prefer different types of food.</p> <p>Look at packaging from different foods dogs eat; what is in the food? Which do they think is better for a dog and why?</p>	<p><u>Task 1</u></p> <p>Collect data and present it. <u>SEN:</u> Use a template for collecting data and a pictograph. Use 1 image for each vote. <u>Year 3:</u> Create own tally chart. Use a template for the pictograph. <u>Year 4:</u> Draw their own tally chart and pictograph templates.</p> <p><u>Task 2</u></p> <p>Assessment</p>

Resources

Packaging of dog food
Images of dogs for pictograph
Template of a pictograph

Assessment sheets

Present the children with a questionnaire about cats and their food preferences: 15 cat owners were asked what kind of food their cats ate. The results were recorded as a tally chart and then turned into a pictograph.



Explain that we are going to conduct our own research but this time about dogs. Make a list of foods dogs like to eat.
(Year 3 could look at dogs and Year 4 could look at another animal)

Following this, the children are going to ask members of staff if they have a dog and if so which of the foods listed do they prefer. Children to complete a tally chart as they collect the data.

Next, using an image of a dog and 1 dog represents 2 votes, children to create a pictograph. Once the pictograph has been completed, children to state which food was the most popular or least popular, and what does this tell us about dogs.

Task 2:
End of topic assessment