



Mendell Primary School



Aspire Challenge Achieve

Medium Term Plan Science



Year Group: 3	Term: Spring 2 continued from Spring 1	Teacher: Jess Hindley	Subject lead: Sarah Bride	Overview: Animals including Humans: <ul style="list-style-type: none"> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	Key End Points: By the end of this unit children will be able to:	
Common Misconceptions: Some children may think: <ul style="list-style-type: none"> snakes are similar to worms, so they must also be invertebrates invertebrates have no form of skeleton. 		Unit key Vocabulary: Skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine		<div style="background-color: #0056b3; color: white; padding: 5px; margin-bottom: 5px;"> Comparative / fair testing <small>Changing one variable to see its effect on another, whilst keeping all others the same.</small> </div> <div style="background-color: #e91e63; color: white; padding: 5px; margin-bottom: 5px;"> Identifying, grouping and classifying <small>Making observations to name, sort and organise items.</small> </div> <div style="background-color: #4caf50; color: white; padding: 5px; margin-bottom: 5px;"> Research <small>Using secondary sources of information to answer scientific questions.</small> </div> <div style="background-color: #00bcd4; color: white; padding: 5px;"> Pattern-seeking <small>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.</small> </div>	<ul style="list-style-type: none"> <input type="checkbox"/> Talk about their skeleton and the job it does <input type="checkbox"/> Identify and name some bones in the human skeletal system <input type="checkbox"/> Talk about and identify the major muscles in the body. E.g. quads, hamstrings, calves, glutes, triceps, biceps <input type="checkbox"/> Talk about how the muscles work <input type="checkbox"/> Compare human and animal skeletons 	
Links to other learning: DT – healthy eating Maths - Statistics	Prior Learning: Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals, including humans) <ul style="list-style-type: none"> 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 (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)	Future Learning: Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans) <ul style="list-style-type: none"> 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) 	High Quality Text: Bones: Skeletons and How They Work by Steve Jenkins. Scientist to study: Wilhelm Roentgen (Physicist who discovered x-rays) Marie Curie (Physicist who invented the first mobile x-ray machine to treat soldiers wounded on the battlefield in WWI)	Risk Assessment:	Teacher CPD: ASE plan exemplification – Amelie/ Max Reach out CPD https://www.reachoutcpd.com/ sign up for free.	

	<ul style="list-style-type: none"> Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - 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) 					
<u>Learning Intention</u>	<u>Lesson Outline</u> (Key Questions in colour)			<u>Resources</u>	<u>Vocabulary</u>	<u>Lowest 20% Adaptations</u>
Have a model skeleton up in the classroom for the children to refer to – small plastic model in science resources in hall. Ensure working wall is added to as the children learn more e.g. start with blank skeleton children can label with pos it notes.						

1	<p>L.I. I can use resources to name parts of a human skeleton and say what the function of a skeleton is.</p>  	<p>This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is identifying, naming and asking questions.</p> <p>Prior knowledge recap: What do we already know about humans? Possible prior knowledge from children could be – humans are mammals, they can be carnivores, herbivores or omnivores, we need a balanced diet, humans need food, water and air to survive, exercise is good for our bodies, name body parts linked to sense.</p> <p>Pre assessment: vocabulary-matching activity – children work together to see if they can correctly match up the vocabulary to definitions. This will be repeated in last lesson to see progression – ensure some evidence is recorded e.g. photos. – cards are in Max exemplification PowerPoint.</p> <p>Big Question: what is a skeleton and why do we have it?</p> <p>Show the children a skeleton and ask the children if they know any names of bones in their body – take feedback and point to them on the displayed image or you can use the model. Children should know some basic e.g. skull.</p> <p>Bones Dig - Explain their task – children have parts of a skeleton in their tray full of sand. Children will work in teams to uncover parts of a human skeleton and use their skeleton help sheet to identify the name of the bone. Take photos or video clips of children's discussions. Once their skeleton is complete children will label the names of the bones they have uncovered similar to the example below.</p> <p>Why do we have a skeleton? Take initial responses from the children. To further develop discussions ask the question Explorify – what if – what if my bones were bendy? https://thehumanbodygame.co.uk/ - share the overview information from the website link. Look at x-rays of the human skeleton and share with the children that Wilhelm Roentgen was the Physicist who discovered x-rays and Marie Curie was a physicist who invented the first mobile x-ray machine to treat soldiers wounded on the battlefield in WWI.</p> <p>Word of week – skeleton.-definition and main functions.</p> <p>Exit pass; Concept cartoon – label each speech bubble with a number 1-4 and ask the children to respond to each child's comment.</p>	<p>Skeleton parts printed and laminated, sand, trays, paintbrushes, labelled skeleton poster or help sheet, concept cartoon, https://thehumanbodygame.co.uk/ Max Powerpoint</p>	<p>Skeleton Bones Ribcage Skull Pelvis Vertebra Spine Femur Fibula Finger bones Toe bones Knee cap Scapula</p>	
---	--	--	---	---	--

If you have made video recordings of the children add a QR code or upload to Google drive Year 3 Science evidence folder.

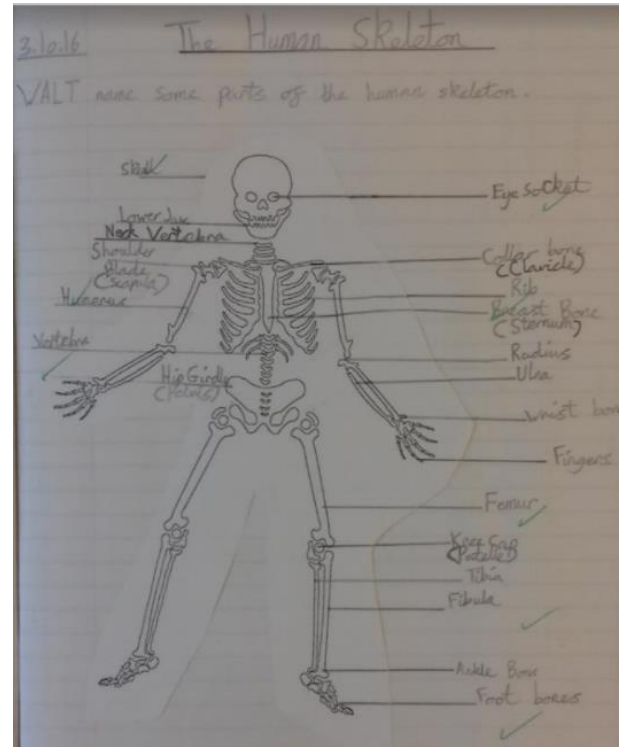


I disagree because without my skeleton my organs arent protected. ✓

I agree because without a skeleton our heart and lungs arent protected. ✓

I agree because my skeleton helps me move. ✓

I disagree because without my skeleton I wouldnt be able to move my muscles. ✓



2 L.I I can compare animal skeletons.



This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is making observations, asking questions and using secondary resources.

Prior Learning;

- What bones do we have in our arms?
- What is the function of a skeleton?
- What part of the skeleton protects our heart and lungs?
- How many bones are in the human skeleton?

Explorify: Funny Bones Odd One Out.

To consolidate learning about the names of different bones ask the children to use the pictures from yesterday and think about ways they could sort them. Children must name the bones before sorting it following their chosen criteria. Some examples could be: top half/bottom half,

Animal skeleton pictures, post it notes, odd one out.

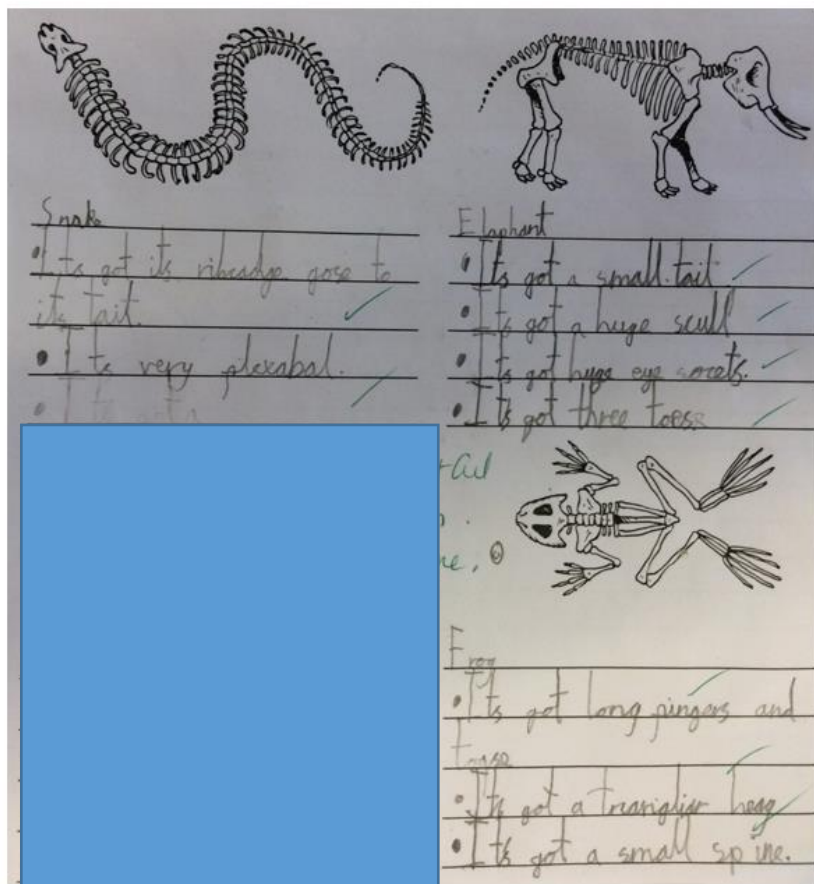
Reptile, mammal, bird, fish, amphibian, skeleton, movement, protection.

bones that protect/bones that don't project. Take photos and use post it notes for children to annotate the method of their sorting to add to books.

Show five animal skeletons: duck, snake, fish, frog, and giraffe. Ask the children to consider similarities and differences between these animals.

Do children draw on prior learning of animal types? Encourage discussions take place around their skeletons.

Task: ask the children to select four skeletons from a range provided by the teacher. Children should make observations about how the animals skeleton helps it move, protects it and supports it. See example:




The children were asked to compare four skeletons.

Well, the elephant and the dinosaur they have big skeletons to keep them up and keep them walking around. The frog goes on land and sometimes his legs can bend up and help him swim. They are in a good position for being on land and in water. The dinosaur is very large and it has a long tail to keep its balance.

Max talks about the differences between skeletons and how they support the animal and help it to move.

Notes for the teacher: the written responses don't show the key areas listed above – ensure written observations are similar to the green oral examples given by this child. Try to encourage children to choose different animal types and record by sticking in a picture of the skeleton and writing underneath, do not create a worksheet.

		<p>Children could develop this further by using iPads to find answers to specific questions they may have about the animal skeletons they choose.</p> <p>Exit Pass: Five lives quiz – consolidation of all learning so far.</p>			
3	<p>L.I. I can sort animals according to whether they have a backbone and can explain how animals without a backbone protect themselves.</p> 	<p>This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is making observations and comparisons to identify and sort.</p> <p>Prior Learning; What bones do we have in our legs? What is the function of a skeleton? What part of the skeleton protects our brain? How are animal's skeletons different to human skeletons?</p> <p>Big Question: Do all animals have a backbone?</p> <p>Word of the week; invertebrate/vertebrate. The word vertebrate comes from the word vertebrae, which means backbone or spinal column. Invertebrates have no backbone or spinal column.</p> <p>Give the children a variety of picture cards to sort into invertebrate or vertebrate. Ask them to put any tricky pictures to the side to discuss as a class – you may want to google any they identify as tricky to visually show them the animals skeleton or lack of.</p> <p>Explorify odd one out – get a backbone – what do the children notice? Are there any similarities or differences?</p> <p>Ask the children can they sort the animals in any other way? Take feedback and encourage the children to explore their thinking by sorting the pictures using their own criteria.</p> <p>Following discussions on their sorting ask the following question: If our skeleton projects and supports us, how do invertebrates protect and support themselves?</p> <p>Now provide them with the following heading: internal skeleton, external skeleton, no protection protective shell and ask the children to sort the animal cards again. Ipad research needed here so the children can check their thinking.</p> <p>Exit Pass: Five lives quiz – consolidation of all learning so far – add a question in about today's learning.</p>	Animal cards, ipads.	<p>Vertebrate, invertebrate, backbone, spine, internal, external, protection, protective, shell.</p>	



To prompt the children to think about how other animals may protect themselves if they do not have a skeleton they were then asked to sort them according to given headings.

The mussel has been incorrectly sorted

Some jellyfish sting and the octopus can squirt black stuff to hide.

4

L.I I can explain how muscles help me move.



This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is making observations, interpretation and communicating results.

Prior Learning;

- What is the function of a skeleton?
- How are animal's skeletons different to human skeletons?
- Can you name an invertebrate? What does this mean?
- Can you name a vertebrate? What does this mean?

Word of the week: muscles

Explorify: What's going on? Odd Octopus –

You're going to watch a short video. The aim isn't to find right answers, it's to explore ideas and find out what they know. **Do they know what might happen based on the image?** After you've watched the video, lead a discussion with your class: **Can your class spot the octopus in the picture? How does the octopus change during the clip? What do the class notice about how the**

Cardboard , split pins, stapler, elastic bands, recording sheet.

contract, shorten, relax, lengthen, biceps, triceps, muscles.

octopus swims? Strong muscles. **Why could the ability to camouflage be useful to an octopus?** Ask the class to describe what they saw using only one word.

Task: ask the children to think of three activities e.g. jumping, running, skipping, reading, sitting etc... The children draw a picture of their chosen activities and using a picture of the human muscles ask the children to predict which muscles will help them complete each activity and then record after the activity. Children identify which activity uses the most/least muscles. See example below.

Show the short clip below of an arm moving.

<https://thehumanbodygame.co.uk/5info-skeleton-triceps>

Discuss: **what is the muscle doing?** Watch <https://www.bbc.co.uk/bitesize/topics/z9339j6/articles/zpbxb82>

Muscles pull on the joints, allowing us to move. ... These muscles help hold the skeleton together, give the body shape, and help it with everyday movements (known as voluntary muscles because you can control their movement). They can contract (shorten or tighten) quickly and powerfully, but they tire easily.

Research questions; use information booklet in resources.

1. **What do muscle do?**
2. **How many muscles are there in the human body? Can you name the 6 major muscles?**
3. **What different types of muscle do we have?**
4. Interesting fact from your research or a did you know fact. E.g. largest muscles, strongest muscle.










Exit pass:

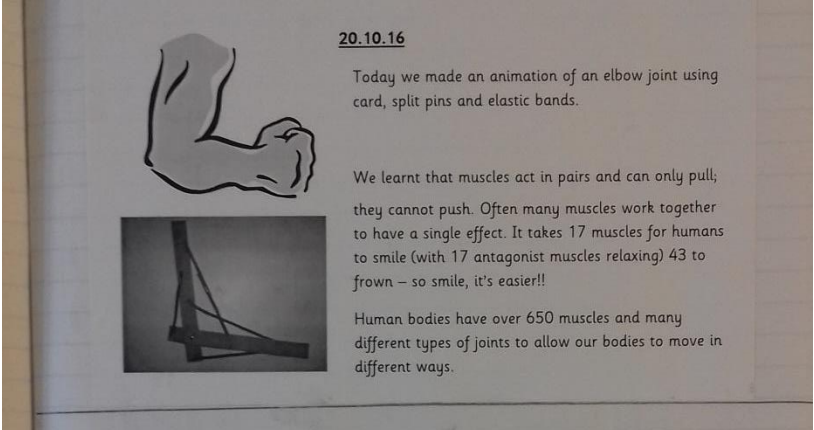

Straighten out and relax one arm and rest your other hand on the **biceps** to feel it. Now flex your arm by lifting it towards your shoulder.

Can you feel the biceps muscle rise up as it contracts? Explain what is happening to the muscles to your partner, using this word bank to help.

Word Bank:

contract, shorten, relax, lengthen, biceps, triceps
 As the arm flexes, the biceps contract. The triceps relax. When the arm is lengthened, the opposite happens. Use card, split pins and elastic bands to create

Activity	Prediction (before the activity)	Results (after the activity)
		
		
		

		<p>an animation of and elbow. Discuss what happened to the muscles and how we can bend our arm at our elbows because of the hinge joint. HMK: Can the children research other joints in the human body.</p>  <p>20.10.16</p> <p>Today we made an animation of an elbow joint using card, split pins and elastic bands.</p> <p>We learnt that muscles act in pairs and can only pull; they cannot push. Often many muscles work together to have a single effect. It takes 17 muscles for humans to smile (with 17 antagonist muscles relaxing) 43 to frown – so smile, it's easier!!</p> <p>Human bodies have over 650 muscles and many different types of joints to allow our bodies to move in different ways.</p>			
5	<p>L.I. I can investigate if there is a link between the length of the human femur and how far you can jump.</p> 	<p>This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is evaluating, interpreting and communicating results.</p> <p>Prior learning: Repeat the vocabulary sorting activity from lesson 1 – are children more secure? – Gap bust if needed. – photograph.</p> <p>Big Question: Can people with longer femurs jump further? – ask the children how could we find out the answer?</p> <p>During the investigation, make it clear to the children that they are good at setting up tests so today you have prepared if for them, using the PowerPoint share what the children will be measuring, changing etc... Explore the need to test a number of children with differing femur lengths. You can discuss predictions at this point.</p> <p>Allow the children to complete their jumping investigation and record their data by drawing their own table and bar graph. As a class look closely at the prepared results on the PowerPoint. What patterns can the children identify? Is there a pattern between the length on the child's femur and the length they can jump? Once the children has seen the teach model how to analyse and interpret the results allow them to complete this using their own groups data. If groups have found different patterns or a result that bucks the trend, discuss these together.</p>	<p>Graph paper, hall, tape measure.</p>	<p>Fair test, femur, length, measuring, interpreting, evaluating, patterns, data,.</p>	

		<p>Ask the children to record what their result show them and mention any unexpected results and use as a learning point. Ask the children if their results have made them think of any other questions that they could test using an investigation. This could be linked to patterns from their results or links to other parts of the skeleton.</p> <p>Exit Pass: <i>Can they find ways of improving their test?</i></p>			
--	--	---	--	--	--