Animals Including Humans: Investigating

Aim

Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Asking relevant questions and using different types of scientific enquiries to answer them.

Setting up simple practical enquiries, comparative and fair tests.

Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.

To design and carry out my own investigation.

It is estimated that this lesson will take approximately 90 minutes.

90 mins Approx.

Success Criteria

I can set my own scientific question to investigate.

I can explain how I would make my test fair.

I can decide what to measure and can take careful measurements.

Standard School Equipment

Measuring tapes/metre sticks

Chalk

Balls (a variety)

Preparation

Knowledge Organiser Activity Sheet– per child

Knowledge Organiser – per child

Your Own Investigation Activity Sheet – differentiated, per child

KWL Grid – per child (these were partly completed by children in Lesson 1)

Key Vocabulary

Fair, test, scientific question, working scientifically, prediction (What do you think will happen?), results (What happened?), measure, investigation, data, conclusion (What have we found out?), evaluation, joints humerus, ulna, radius, femur, tibia, fibula, skeleton.

Prior Learning: In the previous lesson, children investigated whether people with longer femurs jump further. During this unit children have also learnt about the names of parts of the human skeleton and how muscles help them to move.

Learning Sequence

	**Remember It:** Ask children to put their Knowledge Organisers out of sight and to attempt to fill in as many of the gaps as they can on the Knowledge Organiser Activity Sheet in eight minutes, using the timer on the Lesson Presentation. After this time, children can use their Knowledge Organisers to check if they filled in the gaps correctly. Discuss the information they missed and how they might remember it in the future.	5 mins
	**Investigating:** Using the Lesson Presentation, discuss with the children the stages they went through when they investigated a question (whether people with longer femurs can jump further) and planned a fair test in the previous lesson.	5 mins
	**Choose a Question:** Put children into mixed ability groups and ask them to use the prompts on the Lesson Presentation to generate ideas for questions that they could investigate involving the human skeleton. Remind the children that the question needs to be safe and easy to carry out. Share these ideas, then finalise the question that each group will investigate (either with adult support or by appointing a group leader). Can children set their own scientific question to investigate?	15 mins
	**Plan Your Investigation:** Children plan how they will carry out their investigation and record their results, considering how to make their test fair. Children then individually complete the first page of the differentiated Your Own Investigation Activity Sheet, stopping when they have filled in the headings on the results table. Can children explain how they will make their test fair? Can children decide what to measure?  Children are provided with structured sentences with gaps and word banks to scaffold their planning process.  Children are provided with some prompts as they complete the planning process.  Children record information on predicting and planning the investigation with a less structured activity sheet.	20 mins
	**Complete Your Investigation:** Children work in their groups to carry out their investigations. Ensure that everyone has a role to do (you could list or assign different roles). Remind children to be accurate when taking measurements and to record their results carefully on the results table. Can children take careful measurements and record these on a table?	20 mins

	**Conclusions and Evaluations:** Ask the children to look at their results and to see if they can see any patterns. Use the questions on the **Lesson Presentation** to support discussion. Children should then complete the last part of their **Your Own Investigation Activity Sheet**.  Children have sentence starters to complete and are asked to suggest one improvement to the investigation.  Children complete a sentence starter to explain what conclusions they can draw from their results. They are provided with scaffolding to complete a more detailed evaluation.  Children independently draw conclusions and evaluate the investigation.	
	**Reviewing Your Learning:** Give the children their **KWL Grids** from Lesson 1. Using the prompts on the **Lesson Presentation**, ask the children to write down the important knowledge they now have in the final column. In the 'W' column they can also put a tick by the things they now know and a dot by the questions they would still like to know the answers to.	

Exploreit

Researchit: With supervision, children could safely research the questions they would still like to know the answer to as listed on their **KWL Grid**.

Videoit: Children work in a group to make a video that explains how to plan for a fair test, using their own investigations as examples.

Reasonit

Children discuss **Reasoning Cards - Investigating**. Children use their knowledge of the different types of skeletons and the human skeleton to present a reasoned argument that the human skeleton is better than others.

Assessment

Working Scientifically	
Working Towards the Expected Level	Children:
Children can work with support to set up and carry out a test that is fair, including making decisions about what measurements to take.	
Working At the Expected Level	Children:
Children can set up and carry out a test that is fair, including making decisions about what measurements to take.	
Working At Greater Depth	Children:
Children can confidently set up and carry out a test that is fair, including making decisions about what measurements to take and devising their own table to record results.	