



**Respecting the circle of life (Living things and their habitats;
Animals including humans)
BIOLOGY**



Overview and rationale:

In Year 3, the children looked at the life cycles of plants; in Year 4, they extended their knowledge and awareness of humans and animals by looking at food chains and habitats. Now is the time that the children take a look at more complex life cycles of us mammals and compare them to that of amphibians, insects and birds. For the first time, our children look at the science behind reproduction and what happens in puberty, gaining knowledge of the anatomical vocabulary needed to understand their bodies as they change. They look at the fascinating changes that human beings, and other complex species, go through and they touch on the notion of evolution and inheritance, something that is looked at more deeply in Year 6. Due to the personal and relatable nature of the content here, teaching and learning is very much in line with the school's Sex and Relationships Education policy and PSHE curriculum.

SCIENCE LEARNING STATEMENTS

Area of Learning	Knowledge and Skills
Scientific Enquiry and applying knowledge in context	I can use my science experience to explore ideas and raise questions about the world.
	I can talk about how different scientific ideas have developed over time.
	I can select and plan, with help, the most appropriate type of scientific enquiry I might use to answer questions and give justifications.
	I can recognise when and how to set up comparative and fair tests. I can explain which variables need to be controlled and why.
	I can use and develop keys and other information records to identify, classify and describe living things and materials. I can identify patterns that might be found in natural environments.
	I can recognise which secondary sources will be most useful to research my ideas and begin to separate opinion from fact.
	I can make decisions about what observations to make, what measurements to use and how long to make them for.
	I can spot causal relationships in my data and identify evidence that refutes or supports my ideas.
	I can choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. I can take repeat measurements where appropriate.
	I can decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
	I can identify scientific evidence that has been used to support of refute ideas or arguments.
	I can use relevant scientific language and illustrations to discuss, communicate and justify my scientific ideas, use oral and written forms (such as displays and other presentations) to report conclusions, causal relationships and explanations of degree of trust in results.
	I can use results to make predictions and identify when further observations, comparative and fair tests might be needed.

MATHS AND SCIENCE ACROSS THE CURRICULUM – Data Handling and Statistics

Science NC: recording data and results of increasing complexity using scientific diagrams and labels, tables, line graphs, classification keys

NATIONAL CURRICULUM OBJECTIVES

1. describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
2. describe the life process of reproduction in some plants and animals
3. describe the changes as humans develop to old age

KEY VOCABULARY

life cycle, reproduce, reproduction, sexual, sperm, fertilises, egg, live young, metamorphosis, sexual, asexual, plantlets, runners, bulbs, cuttings, mammal, amphibian, insect, bird.
Puberty: the vocabulary to describe sexual characteristics (Y5/6)

'CORE' KNOWLEDGE	'ADDITIONAL' KNOWLEDGE
1) I know that as part of their life cycle, plants and animals reproduce. I know that reproduction is when organisms produce offspring of the same kind.	a) I know that most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg. b) I know that sexual reproduction of plants occurs through pollination, usually involving wind or insects. c) I can recap on the reproductive system of plants.
2) I know that animals including humans have offspring which grow into adults.	a) I know that in humans and some animals these offspring will be born live, such as babies or kittens, and then grow into adults. b) I know that in other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. c) I know that some young undergo a further change before becoming adults - e.g. caterpillars to butterflies. This is called a metamorphosis.
3) I can report and present findings on the life cycle of a mammal, an amphibian, an insect and a bird. REVIEW: Interpret and report: LIFE CYCLE RESEARCH	a) I can draw the life cycle of a range of animals, identifying similarities and differences between the life cycles. b) I know that the arrows of a life cycle point towards the next stage (Y4 recap). c) I can describe the life cycle of humans and as they develop to old age. DO: Observe and measure: GROWTH SURVEY
4) I know plants reproduce both sexually and asexually.	a) I can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways. b) I know that bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent. c) I know that gardeners may force plants to reproduce asexually by taking cuttings.
5) I know that when babies are young they grow rapidly.	a) I know babies are very dependent on their parents and as they develop they learn many skills. b) I can explain how a baby changes physically as it grows and also what it is able to do.
6) I can explain the changes that takes place in boys and girls during puberty. (This will be taught alongside PSHE.)	a) I know that at puberty, a child's body changes and develops sexual characteristics. This enables the adult to reproduce. b) I know the primary sexual characteristics of males and females (body parts linked to reproduction) and the correct scientific vocabulary. c) I know the secondary sexual characteristics of humans, such as pubic hair, facial hair, breasts. I realise that all animals have secondary sexual characteristics, such as a lion's mane or a peacock's feathers.

ART AND DESIGN			
Exploring and Developing			
Exploring and developing ideas	Select and record from first hand observation, experience and imagination and explore ideas for different purposes, including the use of ICT. Question and make thoughtful observations about starting points and select ideas to use in their work. Explore the roles and purposes of artists, craftspeople and designers working in different times and cultures.		
Evaluating and developing work	Compare ideas, methods and approaches in their own and others' work and say what they think and feel about them. Adapt their work according to their views and describe how they might develop it further. Annotate work in sketchbook.		
Drawing Using a Variety of Materials (Recap)			
National Curriculum	Additional Skills	Knowledge	Key Vocabulary
-Use a sketchbook to develop ideas. -Explore the potential properties of the visual elements, line, tone, pattern, texture, colour and shape.	- Experiment by using marks and lines to produce texture. -Work in a sustained and independent way from observation, experience and imagination. -Create a plan in sketchbooks and annotate this with opinions, thoughts and feelings. -Use sketchbooks to collect and record visual information from different sources as well as planning, trying out ideas, plan colours and collect source material for future works -Start to develop their own style using tonal contrast and mixed media.	- Know how to use shading to create mood and feeling. -Know how to represent body language when drawing. - Know how to organise line, tone, shape and forms in movement. -Know how to apply the techniques and specific vocabulary of stumping, smudging and stippling -Identify the differences between hatching, cross-hatching, contour hatching, smudging and stumping and stippling and discuss when it is suitable to choose a particular technique.	Pencil, effect, light, pencil hatching, shading, cross hatching, stumping, smudging, stippling, lighter shading effects, pressure, darker shading effects, pressure, angles, light hatching effects, contour hatching
Artist/Style/Activities			
Picasso/Rembrandt: self-portraits – investigating proportions of human face/compare abstract and photo-realism			

Possible 'higher order' questioning	
Remember	Can you name the biggest bone in the human body? What links muscle to bone and helps them work together?
Understand	Why is the skeleton so important? Do all animals have skeletons? How do muscles help us move?
Apply	Why do we need to eat a healthy and balanced diet? What would happen if we didn't?
Analyse	Compare your body with a friend's. What are the differences? Is it always due to diet? What about exercise? What about just nature and genes?
Evaluate	What would be the impact if one person ate nothing for a week and another person ate just McDonalds? Who'd be healthier?
Create	Can you create an investigation to test the impact that diet has on our energy levels?

School Value	Topic relevance: How/when/where/why is it needed?
Resilience	- During every stage of their lives, human beings have to show tremendous resilience, emotionally and physically. Can you see how? - During their lives, and in each cycle, animals have to show resilience too within whatever their habitat is and whatever part of the food chain or ecosystem they play...and they have done throughout their evolution as a species.
Respect	- We all know how important it is to show respect for habitats, through looking at rainforests earlier in the year and to respect the parts that all of us play in our Earth's ecosystem and global environment. - We show respect for each other's differences as we grow and our bodies change.
Responsibility	- When discussing and looking at how the human body changes, we need to be responsible and mature. We also need to take responsibility in looking after our bodies as they change through puberty. - We have a responsibility to look after the environment and remember what we discussed when looking at rainforests and supporting TWT and WWF.
Happiness	- Throughout the many stages of our lives there will be many reasons to be happy and also many challenges. We need to remember how important it is to look out for others during these difficult times.
Kindness	- We need to be kind and respectful of others' bodies and the changes that they make as they grow and we should respect those differences.
Pride	- We should be proud of ourselves and our bodies as they change. We should all realise that we are all unique and different and this is to be celebrated.