Hampshire Services
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Hampshire Science Team

Progression of Substantive Knowledge in Biology- Animals (including humans)

Year 1-6

HIAS Science Team
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Hampshire County Council

www.hants.gov.uk

Overview

This document contains…

A progressive list of the substantive knowledge related to Biology- Animals (including humans) within the Hampshire Science Learning Journeys with reference to the related National Curriculum statutory requirements.

Points to consider when using this resource

The Learning Journeys provide schools with clearly sequenced substantive knowledge across chemistry, biology and physics. Where possible, the links to the National Curriculum statutory and/or non- statutory requirements have been identified.

Suggested sequence of learning

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	Describing materials		Animal survival	Habitats	Seasons	Plants
2	Animal life cycles		Changing materials		Pushes and pulls	Making New Plants
3	Magnets	Animals, Skeletons and Movement	Solids, Liquids and Gases	Plants and their food production	Light	Rocks and soils
4	Mixtures and separating them	Digestion	Plant Reproduction		Making electrical circuits work	Living things
5	Fossils, geological time and classification	Space and gravity	Making new substances		Forces that oppose motion	Circulation
6	How light behaves		Classification and Evolution	Controlling electrical circuits		Sound

BIOLOGY | CHEMISTRY | PHYSICS

BIOLOGY
Animals (including humans)

Year 1

Substantive Knowledge from Learning Journeys

Animal Survival

Knowledge Block 1- Feeding for survival

- Animals are groups of **organisms** that need to consume food to survive.
- Food provides **energy** and the building blocks of **growth**.
- There are many different groups of animals including **fish, amphibians, reptiles, birds and mammals**. They have different structures, and they eat different types of foods.
- The structure of a variety of common animals varies **Mammals** have hair/fur and give birth to live young, **fish** can breathe underwater using gills, **birds** have feathers, beaks and wings. Females lay eggs. Most birds can fly, **reptiles** are air breathing and have scaly skin and lays eggs, and **amphibians** have smooth slimy skin and live on land and in water.
- Some eat other animals (**carnivores**), and others only eat vegetables (**herbivores**), and some like to eat both plants and meat (**omnivores**)
- Common animals that are **carnivores** include lions, cats, sharks and snakes
- Common animals that are **herbivores** include cows, horses, sheep, elephants and deer
- Common animals that are **omnivores** include humans, bears, monkeys and seagulls

Knowledge Block 2- Moving for survival

- Animals must move to get their food
- They will move in different ways to get their food
- Animals that eat other animals are called **predators**
- Animals that are eaten by other animals are called **prey**
- Animals feeding relationships can be illustrated in a **food chain**

Knowledge Block 3- Sensing for survival

- The five sense organs are the **eyes** (for seeing), **nose** (for smelling), **ears** (for hearing), **tongue** (for tasting), and **skin** (for touching or feeling).
- Animals have senses to help them survive
- Animals have developed a range of ways to find prey or avoid being eaten

National Curriculum Statutory Requirement

Year 1 Animals, including humans

Pupils should be taught to:

- *identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals*
- *identify and name a variety of common animals that are carnivores, herbivores and omnivores*
- *describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)*
- *identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.*

Year 2 Animals, including humans

Pupils should be taught to:

- *find out about and describe the basic needs of animals, including humans, for survival (water, food and air)*

	Substantive Knowledge from Learning Journeys	National Curriculum Statutory Requirement
Year 2	**Animal Life Cycles** **Knowledge Block 1- Animal timelines** • Things that are **living**, move, feed, grow, **reproduce** and use their senses • Animals grow until they reach **maturity** and then don't grow any larger • Animals **reproduce** when they reach maturity (adulthood) • All animals eventually, **die** • Different animals live to different ages • Different animals reach different sizes before they are able to reproduce • Different animals reproduce at different ages • Animals, including humans, have **offspring** which grow into adults • Exercise, eating the right amounts of different types of food and **hygiene** are important to maintain good **health** and **wellbeing** **Knowledge Block 2- How animals get their food** • **Habitats** are places where animals and plants live (from Year 1) • Animals live in habitats in which they are suited. • Different kinds of animals and plants depend on each other within **habitat**. • Animals get their food from plants and other animals. This can be shown in a **food chain**. • A food chain begins with a **producer**. This is often a green plant because plants can make their own food. • A living this that eats other plants is called a **consumer**.	***Year 2 Living things and their habitats*** ***Pupils should be taught to:*** • *explore and compare the differences between things that are living, dead, and things that have never been alive* • *identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other* • *identify and name a variety of plants and animals in their habitats, including micro-habitats* • *describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.* ***Year 2 Animals, including humans*** ***Pupils should be taught to:*** • *notice that animals, including humans, have offspring which grow into adults* • *describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.*
Year 3	**Animals, skeletons and movement** **Knowledge Block 1- Skeletons protect vital organs** • All **vertebrates** have internal **skeletons** that protect **vital organs**. • **Invertebrates** have **exoskeletons** that protect **vital organs**. **Knowledge Block 2- Skeletons support weight** • Skeletons support the weight of land animals. • Stronger bones can **support** a greater **mass.** **Knowledge Block 3- Skeletons support movement** • Bones are **connected** (but can move relative to each other) at joints. • **Muscles** connect to bones and move them when they **contract**. • Stronger bones can **anchor** stronger muscles.	***Year 3 Animals, including humans*** ***Pupils should be taught to:*** • *identify that humans and some other animals have skeletons and muscles for support, protection and movement.*

Year 4	Substantive Knowledge from Learning Journeys	*National Curriculum Statutory Requirement*
	Digestion **Knowledge Block 1- Food groups** ○ Animals need a variety of foods to help them grow and survive. The main food groups are: • **Meat**, **dairy** and pulses provide **protein** for muscles. • **Grains** and **root vegetables** provide **carbohydrates** for energy. • **Fat** for **insulation** and energy. • **Fruit** and **vegetables** for **minerals, vitamins and fibre**. These are essential to keep our bodies working well and protect us from illnesses. **Knowledge Block 2- Variation in animals' diet** • Different animals require different foods to survive. • Animals get their food from plants and other animals. This can be shown in a **food chain**. (From Year 2) • A food chain begins with a **producer**. This is often a green plant because plants can make their own food. (From Year 2) • A living this that eats other plants is called a **consumer**. (From Year 2) • Humans require a balanced diet to remain **healthy** but healthy diets vary depending upon the type of activity that humans do. • Humans have 2 sets of teeth in their lifetimes • Humans have three main types of teeth- incisors, canines and molars. • Incisors help to bite off and chew pieces of food. • Canines are used for tearing and ripping food. • Molars help to crush and grind food. **Knowledge Block 3- How humans digest food** • The **nutrients** in food have to get to every part of the body. The **blood** transports them. • The role of **digestion** is to get the nutrients in food to dissolve in the blood, if it doesn't dissolve it can't enter the blood and be transported.	***Year 3 Animals, including humans*** ***Pupils should be taught to:*** • *identify that animal, 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* ***Year 4 Animals, including humans*** ***Pupils should be taught to:*** • *describe the simple functions of the basic parts of the digestive system in humans* • *identify the different types of teeth in humans and their simple functions* • *construct and interpret a variety of food chains, identifying producers, predators and prey.*

	Substantive Knowledge from Learning Journeys	National Curriculum Statutory Requirement
Year 5	**Circulation** **Knowledge Block 1: Getting oxygen into the blood** • All animals need **oxygen** to survive. • Air is breathed into the **lungs** where the oxygen in the air is passed into the blood. • Every part of animals' bodies need oxygen, especially **muscles**. • Muscles need a supply of oxygen and **sugar (glucose)** to make them work, they are supplied by the blood. **Knowledge Block 2: The blood circulation model** • The heart is a vital organ pumps blood through the blood vessels. • Blood Vessels are the tubes that blood flows through. • The blood **circulates** around the body in a way that ensures all muscles in the body get a supply of oxygen and sugar. • The **heart** pumps blood to every muscle in the body. The circulatory route must allow the blood to collect oxygen from the lungs, sugar from the intestines and visit muscles. • The blood then returns to the heart where it is pumped again. • Exercise helps the heart to work more efficiently. • Eating a healthy diet helps to keep the blood vessels from getting blocked. • Avoiding smoking and alcohol puts less stress on the whole system and keeps it healthier.	***Year 6 Animals, including humans*** ***Pupils should be taught to:*** • *identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood* • *recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function* • *describe the ways in which nutrients and water are transported within animals, including humans.*
	Year 5 Animals, including humans • *describe the changes as humans develop to old age.* ***Relationships Education, Relationships and Sex Education (RSE) and Health Education*** *66. The content set out in this guidance covers everything that primary schools should teach about relationships and health, including puberty. The national curriculum for science also includes subject content in related areas, such as the main external body parts, the* ***human body as it grows from birth to old age*** *(including puberty) and reproduction in some plants and animals. It will be for primary schools to determine whether they need to cover any additional content on sex education to meet the needs of their pupils. Many primary schools already choose to teach some aspects of sex education and will continue to do so, although it is not a requirement.* *104. Relationships Education, RSE and Health Education complement several national curriculum subjects. Where schools are teaching the national curriculum, they should look for opportunities to draw links between the subjects and integrate teaching where appropriate. There continues to be no right of withdrawal from any part of the national curriculum.*	
Year 6		

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