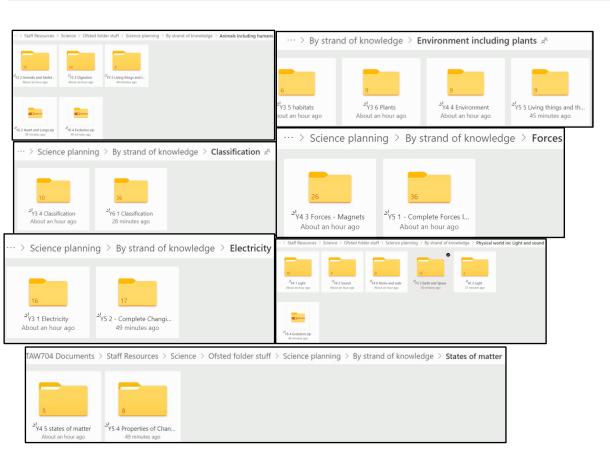
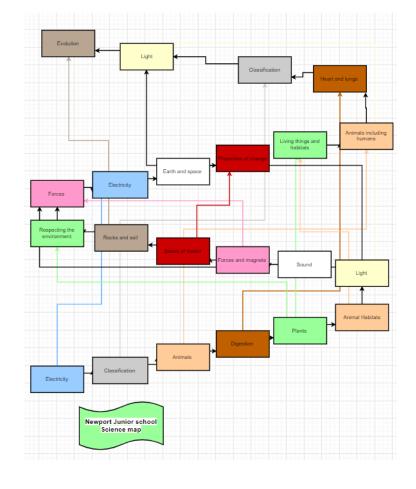
#### TAW704 Documents > Staff Resources > Science > Ofsted folder stuff > Science planning > By strand of knowledge Modified ∨ Name > Modified By ∨ Animals including humans 2 hours ago Lawson, Elliott About an hour ago Lawson, Elliott About an hour ago Environment including plants Lawson, Elliott 2 hours ago 2 hours ago Lawson, Elliott Physical world inc Light and sound About an hour ago Lawson, Elliott States of matter 2 hours ago Lawson, Elliott



## NJS Science strands

A look into the development of knowledge based on expectation and planning across scientific strands.



## Animals including humans

#### **Prior learning:**

Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 -Animals, including humans. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans)

#### **Future learning:**

The mechanism of breathing to move air in and out of the lungs (KS3)

Differences between species (KS3)

Heredity as the process by which genetic information is transmitted from one generation to the next. (KS3)

- I can compare animals based on diet.
- I can describe functions of the skeleton in animals and human can compare animals based on diet.
- I can describe functions of the skeleton in animals and humans.
- I can name specific bones in the human body.
- I understand some animals have endo and exo skeletons.
- I understand how a skeleton affects movement.
- I understand that animals need the correct nutrition to support skeletons.

- I can explain the need for food in animals.
- I can name and describe parts of the human digestive system.
   I can compare functions of
- teeth.
- I understand animals need nutrients to survive.
- I understand nutrients need to be broken down and digested.
- I understand different food produces different nutrients.

- I can explain the difference between types of organisms.
- I can identify differences in life cycles of types of animals.
- I can describe the reproduction of plants.
- I understand all living things need to grow.
- I understand the importance of reproduction to living things.
- I understand the differences in organisms.

- I can explain how humans change.
- I can describe stages of life in humans.
- I can discuss affects of puberty.
- I understand living things grow as they get older.
- I understand living things reproduce.
- I understand the change in humans that enables reproduction.

- I can name the main parts of the circulatory and respiration system.
- I can describe functions of the circulatory and respiration system.
- I can discuss the purpose of blood and blood vessels.
- I understand that body systems work together.
- I understand the importance of body systems to a healthy body.
- I understand how circulatory and respiration systems effect gas exchange.

- I can explain the concept of evolution.
- I can describe how organisms adapt to their environment.
- I can discuss the formation of fossils to understand life from millions of years ago.
- I understand plants and animals have changed over time.
- I understand that Charles Darwin formed the theory of evolution.
- I understand animals need to adapt to survive.

Y3 - Animals

Y3 – Animal habitats

Y5 – Living things and habitats

Y5 – Animals including humans

Y6- Heart and lungs

Y6 – Evolution

- I1- Diets
- L2- Food Groups
- L3- Nutrition
- L4- Skeletons
- L5- Naming Bones
- L6- Functions of skeleton
- L7- Muscles

L1-Parts of DS

- L2- Functions of
- DS
- L3- Types of teeth
- L4/5-Tooth decay enquiry
- L6- Food chains

L1/2- Making new plants

- L3- mammals
- L4- Jane Goodall
- L5- Metamorphasis
- L6- Compare life cycles

L1-Life stages

- L2- Change in
- puberty
- L3 Reproduction
- L4- change in old age
- L5- Life cycles

L1- circulatory system

- L2- the heart
- L3- Blood
- L4- Lungs
- L5- risks and effects
- L6- healthy bodies

L1- Inheritance

- L2- Adaptation
- L3 Theory of evolution
- L4- evidence
- L5- evidence in
- humans L6- human
- intervention

#### **Key Vocab**

Carnivore. herbivore. omnivore, skeleton, bones, muscles, joints, support, protect, move, spine Digest, absorb, mouth. oesophagus, stomach, small intestine, excrete, reproduction, life cycle, babyhood, childhood. adolescence, adulthood Heart, circulation, pulse, muscle, blood vessel, lung, breathe natural selection. variation, inherited, adaption, DNA, mutation, fossil, characteristic

### Classification

#### **Prior learning:**

Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)

Future learning:
Differences between species (KS3)

This strand is heavily

Key Vocab

Classification. classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate mammals, plants, animals, vertebrates. invertebrates. reptiles, amphibians, fish, birds, species, environment, habitat, extinct, virus,

- I can explain differences in groups of organisms.
- I can use key vocabulary to compare animals.
- I can use a classification key to identify organisms..
- I understand organisms are grouped together.
- I understand how to use a classification key.
- I understand how organisms are affected by their environment.

- I can create a classification key.
- I can use key vocabulary to ask specific questions.
- I can accurately identify organisms based on characteristics.
- I understand living things are grouped based on attributes.
- I understand open and closed questions.
- I understand where the idea of classification developed.

supported by the
Animals and living
things strand. There
are also strong links
with computing with
the use of databases.

Y3 - Classification

Y6 - Classification

- L1- Group living things
- L2- Classify vertebrates
- L3- Invertebrate hunt
- L4- Classification keys
- L5- Habitat survey
- L6- Environmental changes

- L1- Classifying conundruns
- L2- Linnaean system
- L3- Curious creatures
- L4/5- Micro organisms
- L6- Field guide

## Electricity

#### **Prior learning:**

Children know about similarities and differences in relation to places, objects, materials and living things

#### Future learning:

Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge. (KS3)

Key Vocab

Electricity, electrical appliance/dev ice, mains, plug, electrical circuit, complete circuit,, cell, battery,, bulb, switch, buzzer, conductor. insulator, symbol, circuit diagram, component, voltage, brightness, switch, cell

- I can identify common appliances that run on electricity.
- I can explain how electricity is generated.
- I can explain how a circuit works, understanding open and closed circuits.
- I understand how to use electrical components.
- I understand how to create a closed circuit.
- I understand circuit components do a variety of jobs.

- I can name and identify components of a circuit.
- I can draw simple circuits using symbols.
- I can describe the effect of more cells on a circuit
- I understand a circuit needs to be closed for electricity to flow.
- I understand more power varies from the amount of cells.
- I understand how circuits are drawn.

Electricity is also supported in multiple DT modules across KS2. discussing and creating circuits.

Y3 - Electricity

Y5 - Electricity

- L1- Generating electricity
- L2- Electrical appliances
- L3- Circuits
- L4- Conductors and insulators
- L5- Switches
- L6- Investigate switches

L1-Recap electricity

L2- Change of brightness or speed

L3- recognise symbols L4/5 – Plan and execute enquiry into brightness of bulbs.

### **Forces**

#### **Prior learning:**

Find out how the shapes of solid objects made from some materials can be changed. (Y2 - Uses of everyday materials)

#### Future learning:

Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces. (KS3)

Key Vocab

force meter, newton, resistance, magnet, spring Metal, , attract, repel, attraction. repulsion, gravity, friction gravity, acceleration, newtons, airresistance, up thrust, friction, axle, pulley, gear, fulcrum, lever, ratio, ramp

- I can explain how objects move based on forces.
- I can discuss how magnetism effects objects.
- I can identify magnetic and non magnetic substances.
- I understand that force is push or pull.
- I understand the role of different forces on movement.
- I understand magnetisms affect in metallic objects.

- I can explain a force is a push or pull motion.
- I can describe different forces and their effects.
- I can measure forces.
- I understand forces have an effect on all objects.
- I understand forces can be effected by conditions around them.
- I understand how forces impact movement.

Forces are also supported in multiple DT modules across KS2.

Y4 – Forces inc magnets

Y5 – Forces in action

- L1- Push and pull
- L2- Fast and slow
- L3 Scrapyard challenge
- L4- Magnet strength
- L5 Magnetic poles
- L6- Marvellous magnets

L1- Gravity

L2- Friction

L3- Air resistance

L4- Water resistance

L5- Levers and pulleys

L6- Gears

# Environment including plants

#### **Prior learning:**

Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)

Find out and describe how plants need water, sunlight and suitable temperature to grow.(Y2)

#### Future learning:

Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal,. (KS3

- I can describe different habitats.
- I can explain how animals live in different habitats.
- I can discuss how animals have adapted to live in certain environments
- I understand how environments can be different.
- I understand specific animals live in certain environments.
- I understand that certain animals have adaptations based on habitat.

- I can name parts of a plant.
- I can describe functions of a plant.
- I can explain pollination in plants
- I understand parts of a plant have different functions.
- I understand some plants need pollinators.
- I understand plants need conditions to grow.

- I can explain what an environment is.
- I can identify natural and man made environments.
- I can describe how humans affect the environment.
- I understand humans impact the environment.
- I understand the effect of pollution on water.
- I understand some affects are reversible and others are not.

- I can explain the difference between types of organisms.
- I can identify differences in life cycles of types of animals.
- I can describe the reproduction of plants.
- I understand all living things need to grow.
- I understand the importance of reproduction to living things.
- I understand the differences in organisms.

Y3 - Habitats

Y3 - Plants

Y4 - Environment

Y5 – living things and habitat

L1- Desert Habitats

L2-Polar Habitats

L3- Rainforest Habitats

L1- Parts of a plant

L2- What is needed to grow investigation

L3- Results

L4- moving water

L5-fantastic flowers

L6-Life cycle

L1- Environments

L2-Plastic

L3-Climate change

L4-Deforestation

L5- Make a difference

L1/2- Making new plants

L3- mammals

L4- Jane Goodall

L5- Metamorphosis

L6- Compare life cycles

Key Vocab

environment.

habitat, human impact, positive, negative, migrate, hibernate Photosynthesis, pollen, insect/wind pollination, seed formation. seed dispersal (wind dispersal, animal dispersal, water dispersal) Reproduce/ reproduction, stamen, stigma, sepal, petal, ovary, pollen, Style, Germinate/ germination,

## States of matter

#### **Prior learning:**

Find out how the shapes of solid objects made from some materials can be changed. (Y2 - Uses of everyday materials)

#### Future learning:

Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces. (KS3)

#### **Key Vocab**

material, solid, liquid, gas, melt, freeze, dissolve. solution oxygen, carbon dioxide, air, evaporation, condensation mixture, dissolve, solvent, solute, soluble , Insoluble, filtration, evaporation, condensation. solidify, insulate

- I can explain how objects move based on forces.
- I can discuss how magnetism effects objects.
- I can identify magnetic and non magnetic substances.
- I understand that force is push or pull.
- I understand the role of different forces on movement.
- I understand magnetisms affect in metallic objects.

- I can explain a force is a push or pull motion.
- I can describe different forces and their effects.
- I can measure forces.
- I understand forces have an effect on all objects.
- I understand forces can be effected by conditions around them.
- I understand how forces impact movement.

Forces are also supported in multiple DT modules across KS2.

Y4 – Forces inc magnets

Y5 – Forces in action

- L1- Solid liquid gas
- L2- Investigate gas
- L3 Heat and cool
- L4- Water
- L5- Evaporation
- L 6 Water cycle

- L1- Gravity
- L2- Friction
- L3- Air resistance
- L4- Water resistance
- L5- Levers and pulleys
- L6- Gears

## Physical world including light and sound

#### Prior learning:

Describe simple properties of a variety of everyday materials (Y1-Materials) Idenify and name body parts in relation to senses (Y1 animals) Identify and compare everyday materials )y2 uses of materials) Observe and describe change in weather and seasons (y1- seasonal changes)

#### **Future learning:**

The similarities and differences between light waves and waves in matter. (KS3)

Heredity as the process by which genetic information is transmitted from one generation to the next. (KS3)

Our Sun as a star, other stars in our galaxy, other galaxies. (KS3)

- I can identify natural and man made sources of light.
- I can explain how light travels and what blocks it.
- I can use a torch to explore light.
- I understand how light travels.
- I understand how shadows are formed.
- I understand different materials let different amounts of light through.

- I can describe how sounds are made.
- I can explain how sounds travel through vibrations.
- I can recognise how sound is picked up in the ear.
- I understand sound is related to vibrations.
- I understand sounds can differ based on pitch.
- I understand how distance affects sound.

- I can name different types of rock.
- I can group rocks together based on properties.
- I can explain how rocks are formed, including fossils.
- I understand rocks have different characteristics.
- I understand the formation of rocks affects their properties.
- I understand fossils relations to rock formation.

- I can explain night and day based on rotation of the Farth.
- I can describe months based on the moons orbit.
- I can name planets in the solar system.
- I understand the effect of gravity on the solar system.
   I understand all planets orbit
- the sun.
  I understand the distance from the sun effects a planets

- I can discuss how light travels in a straight line.
- I can explain how light reflects off objects to be seen.
   I can investigate factors that affect

shadow formation.

- I understand the journey of light from source to our eye.
- I understand shadows have the same shape as the object blocking light.
- I understand how light can be measured and recorded.

- I can explain the concept of evolution.
- I can describe how organisms adapt to their environment.
- I can discuss the formation of fossils to understand life from millions of years ago.
- I understand plants and animals have changed over time.
- I understand that Charles Darwin formed the theory of evolution.
- I understand animals need to adapt to survive.

Y4 -Light

Y4 sound

Y4- Rocks

Y5 – Earth and space

conditions.

Y6- Light

Y6 - Evolution

I 1- Inheritance

L1- Why we need light L2- Reflections

L3/4- The eye and how we see

L5-Opacity of objects

L6- Shadows

L1-how is sound made

L2- How do we hear

L3- Loud or quiet

L4-Muffle sounds

L5- change pitch L6- Making music L1-Layers of the earth

L2- Volcanoes

L3- Types of rock

L4-Fossils

L5 - What is soil

L6- Soil formation

L1-spherical bodies L2-size and distance L3- rotation Day and

night

L4- seasonal sun

L5- Sun movement and days

L6-Moon and earth

L1- Shadows

L2- Periscope reflection

L3- Eye structure

L4- Explanation of the eye

L2- Adaptation L3 – Theory of evolution L4- evidence

L5- evidence in

humans

L6- human

intervention

Key Vocab Dark, shadow,

opaque, direction, light travels, transparent, Translucent, shortest, longest, highest, object, material, light source, sun, night, day, Sound, pitch, loudness, vibrate, vibration. vibrating, tuning, muffle, Quiet, soft, loud, high, low, noise, source slate, granite, chalk, sandstone, soil, clay, limestone, sand marble. absorbent, characteristic, surface, Light, beam, opaque, mirror, source, reflected, Travel, block, shiny

surface