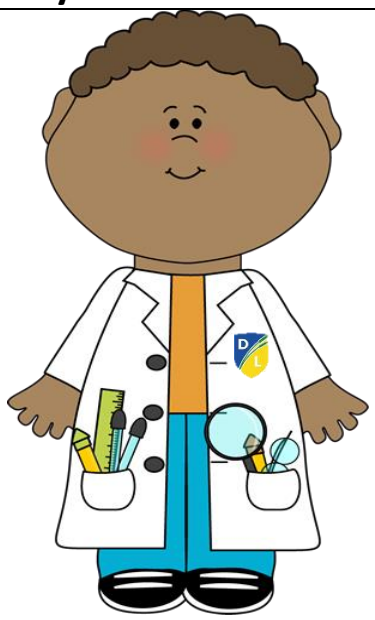
Days Lane's Scientist

Vocabulary:

- Series
- Amps
- Volts
- Refraction
- Spectrum
- Adaptation
- Evolution
- Characteristics
- Reproduction
- Genetics
- Vertebrates
- Invertebrates
- Micro-organisms
- Amphibians
- Reptiles
- Mammals
- Heart
- Blood vessels
- Veins
- Arteries
- Oxygenated
- Deoxygenated
- Valve
- Exercise
- Respiration
- Circulatory



Enrichment experiences:

- Science week
- Science visitors/speakers e.g. STEM Visitors from different science careers (including parents)
- Science shows/workshops e.g. Townley Grammar School
- Growing challenges e.g. sunflowers

Skills:

- Recognises scientific questions that do not yet have definitive answers.
- Selects methods to use to solve problems or answer questions, including a full range of enquiry methods, which are planned in detail.
- Explains why particular pieces of equipment or information sources will provide better quality evidence.
- Repeats sets of observations or measurements, where appropriate, selecting suitable ranges and intervals, to give sufficient depth of evidence.
- Decides on the most appropriate formats to present sets of scientific data, such as using line graphs for continuous variables.
- Communicates findings in written form, across a range of genre, and uses multi-media and other forms of presentations.
- Uses scientific evidence to answer questions to support findings.
- Draws valid conclusions that utilise more than one piece of supporting evidence.
- Provides explanations for differences in repeated observations or measurements, identifying reasons for any anomalies noticed.
- Evaluate the effectiveness of their working methods, making practical suggestions for improving them.
- Can take measurements, using a range of scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate.

Knowledge:

<u>Living things and their habitats</u>

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.

Animals, including humans

- 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.

Evolution and inheritance

- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Light

- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.
- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Electricity

- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
- Use recognised symbols when representing a simple circuit in a diagram.

Scientific Enquiries:

Observing over time
Which type of bread did fungus grow best on?

Comparative and fair testing
How does the distance of the light source from the screen affect the size of the shadow produced?

Identifying and classifying
Which foods are high in fat?

Pattern seeking
What happens to the brightness of a bulb when you add more bulbs to the circuit?

Researching using secondary sources
How are microorganisms used in industry?

Vocabulary

Reception:

Children should be taught the names of different animals, plants and objects to help them understand the world around them. They should also learn the meaning of the following words:

- Experiment
- Speed
- Pattern
- Balance
- Predict
- Hard
- Soft
- Light
- Dark
- Head
- Arm
- Elbow
- Nose
- Leg
- See
- Hear
- Taste
- Smell
- Feel
- Wet
- Slow
- Fast

Year 1:

- Fish
- Reptiles
- Mammals
- Birds
- Amphibians
- Herbivore
- Omnivore
- Carnivore
- Wings
- Beak
- Deciduous
- Evergreen trees
- Leaves
- Flowers (blossom)
- Petals
- Fruit
- Roots
- Seed
- Trunk
- Branches
- Stem
- Wood
- Plastic
- Glass
- Paper
- Metal
- Rock
- Hard
- Soft
- Bendy
- Rough

Year 2:

- Survival
- Water
- Air
- Food
- Adult
- Baby
- Offspring
- Kitten
- Calf
- Puppy
- Exercise
- Hygiene
- Light
- Temperature
- Growth
- Living
- Dead
- Habitat
- Energy
- Food chain
- Predator
- Prey
- Woodland
- Pond
- Desert
- Stretchy
- Stiff
- Flexible
- Waterproof
- Absorbent
- Opaque
- Transparent
- Squashing

Year 3:

- Movement
- Muscles
- Bones
- Skull
- Nutrition
- Skeletons
- Air
- Water
- Nutrients
- Soil
- Reproduction
- Transportation
- Dispersal
- Pollination
- Flower
- Fossils
- Soils
- Sandstone
- Granite
- Marble
- Pumice
- Crystals
- Absorbent
- Shadows
- Mirror
- Reflective
- Dark
- Reflection
- Magnetic
- Force
- Attract
- Repel
- Friction

Year 4:

- Mouth
- Tongue
- Teeth
- Oesophagus
- Stomach
- Intestine
- Herbivore
- Carnivore
- Canine
- Incisor
- Molar
- Vertebrates
- Amphibians
- Reptiles
- Birds
- Mammals
- Invertebrates
- Environment
- Habitats
- Solid
- Liquid
- Gas
- Evaporation
- Condensation
- Particles
- Temperature
- Freezing
- Heating
- Volume
- Vibration
- Wave

Year 5:

- Foetus
- Embryo
- Womb
- Gestation
- Development
- Puberty
- Mammal
- Reproduction
- Insect
- Amphibian
- Bird
- Offspring
- Hardness
- Solubility
- Transparency
- Conductivity
- Magnetic
- Filter
- Evaporation
- Dissolving
- Mixing
- Earth
- Sun
- Moon
- Axis
- Rotation
- Day
- Night
- Phases of the Moon
- Star
- Constellation
- Air resistance

	• Smooth • Summer • Spring • Autumn • Winter	• Bending • Twisting • Stretching • Elastic • Foil	• Poles • Push • Pull	• Pitch • Tone • Speaker • Cells • Wires • Bulbs • Switches • Buzzers • Battery • Circuit • Conductors • Insulators	• Water resistance • Gravity • Newton • Gears • Pulleys

Enrichment experiences					
Reception: Forest school Science week Learning about waste and the environment (recycling) Butterflies/chicks Growing challenges Visitors from different science careers (including parents)	**Year 1:** Forest school Science week Trip to the local area Learning about waste and the environment (recycling) Butterflies/chicks Growing challenges Visitors from different science careers (including parents)	**Year 2:** Science week Trip to the local area Science Museum (Wonderlab) Growing challenges Science shows/ workshops Visitors from different science careers (including parents) Tortoises/animal visits	**Year 3:** Science week Science visitors/speaker Growing challenges Science shows/ workshops Science museum Visitors from different science careers (including parents)	**Year 4:** Science week Science visitors/speaker Growing challenges Science shows/ workshops Science Museum Visitors from different science careers (including parents)	**Year 5:** Science week Science visitors/speaker Growing challenges Science shows/ workshops Science Museum Visitors from different science careers (including parents)

Knowledge

Reception:	Year 1:	Year 2:	Year 3:	Year 4:	Year 5:
Early Learning Goal: They know about similarities and differences in relation to places, objects, materials and living things They talk about the features of their own immediate environment and how environments might vary from one another.	**Animals, including humans** 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. **Seasonal changes** Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.	**Living things and their habitats** 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 microhabitats 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 **Everyday materials** Identify and compare the suitability of a variety of everyday materials,	**Animals, including humans** Identify that animals, including humans, need the right types and amount of nutrition. Identify that humans and some other animals have skeletons and muscles. **Rocks** Compare and group together different kinds of rocks. Describe in simple terms how fossils are formed. **Light** Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. **Forces and magnets**	**Living things and their habitats** Recognise that living things can be grouped in different ways. Explore and use classification keys to help group, identify and name a variety of living things. Recognise that environments can change and that this can pose dangers to living things. **Animals, including humans** 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. **States of matter** Compare and group solids, liquids and gases. Observe that some materials change state at different temperatures.	**Living things and their habitats** Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe reproduction in some plants and animals **Animals, including humans** Know how humans develop to old age. **Properties and changes of materials** Know that some materials will dissolve in liquid to form a solution. Describe how mixtures might be separated, including through filtering, sieving and evaporating. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible.

	Everyday materials Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties. **Plants** Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching **Animals, including humans** Find out about and describe the basic needs of animals. 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. **Plants** Observe and describe how seeds and bulbs grow into mature plants. Find out what a plant needs to be healthy.	Compare how things move on different surfaces. Observe how magnets attract or repel each other. Compare and group together a variety of everyday materials. Describe magnets as having 2 poles. **Plants** Describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore what a plant needs to be healthy. Explore the part that flowers play in the life cycle of flowering plants.	Understand the water cycle. **Sound** Identify how sounds are made. Recognise that vibrations from sounds travel to the ear. Explore pitch and volume. Recognise that sounds get fainter as the distance increases. **Electricity** Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Recognise that a switch opens and closes a circuit. Recognise some common conductors and insulators.	**Earth and space** Describe the movement of the Earth and other planets relative to the sun. Describe the movement of the moon relative to the Earth. Describe the sun, Earth and moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night. **Forces** Explain that objects fall towards the Earth because of gravity. Identify the effects of air resistance, water resistance and friction. Explore levers, pulleys and gears which allow a smaller force to have a greater effect.

Skills					
Reception: **40-60:** Looks closely at similarities, differences, patterns and change **Early Learning Goal:** They make observations of animals and plants and explain why some things occur, and talk about changes.	**Year 1:** Asking simple questions Observing closely, using simple equipment Performing simple tests Identifying and classifying Gathering and recording data to help in answering question – for example diagrams with labels and recording observations	**Year 2:** Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment and using equipment safely and independently Performing simple tests Identifying and classifying Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering question- for example using prepared tables to record data, recording observations and making comparisons.	**Year 3:** Can set up simple practical enquiries, comparative and fair tests. Can make observations and take accurate measurements using standard units and equipment, including thermometers and data loggers. Can record findings using simple scientific language. Can record findings using drawings, diagrams and tables. Can report on findings from enquiries, including oral and written explanations. Can use straightforward scientific evidence to answer questions or to support their findings	**Year 4:** Can ask relevant questions and using different types of scientific enquiries to answer them. Can set up simple practical enquiries, comparative and fair tests. Can make systematic and careful observations and take accurate measurements using standard units and a range of equipment, including thermometers and data loggers. Can gather, record, classify and present data to help in answering questions. Can record findings using simple scientific language, bar charts, tables and keys. Can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Can identify differences, similarities or changes related to simple scientific ideas.	**Year 5:** Can plan different types of scientific enquiries to answer questions Can take measurements, using a range of scientific equipment including data loggers. Can record data and results of increasing complexity using scientific diagrams and labels, tables and line graphs. Can use test results to make predictions. Can report and present findings from enquiries, including conclusions, explanations in oral and written presentations